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University of California Bulletin

THIRD SERIES. Vol. XIII, No. 7

ANNUAL REPORT

OF THE

PRESIDENT OF THE UNIVERSITY

1918-1919

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1919-20. No. 10

UNIVERSITY OF CALIFORNIA

Annual Report of the President of
the University on Behalf of the
Regents to His Excellency the
Governor of the State of California

1918-1919

UNIVERSITY OF CALIFORNIA PRESS
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REPORT OF THE PRESIDENT OF THE UNIVERSITY

UNIVERSITY OF CALIFORNIA,

BERKELEY, July 15, 1919.

*To His Excellency William Dennison Stephens,
Governor of the State of California.*

SIR: I have the honor to submit herewith my annual report on the condition of the University from July 1, 1918, to July 15, 1919.

Respectfully submitted,

BENJ. IDE WHEELER,
President.

SUMMARY OF REPORTS

SUBMITTED TO THE PRESIDENT BY DEPARTMENTS*

Agriculture.—Notable among the activities of the Department of Agriculture during the year have been the expansion of the department's extension activities through the state and the emergency courses of study offered at the University Farm. The details of the department's extension activities, as carried on by seventy-five members of the staff employed the whole time, and the remaining members employed a considerable part of the time during the last two years, have been set forth at some length in the department's Circulars No. 208 and No. 209. There are now over 22,000 members of the State Farm Bureaus, holding over 400 meetings in as many Farm Bureau centers monthly. A teacher training center for students planning to engage in high school agriculture work has been established at Davis at the request of the California State Board of Education. To date 102 of these so-called emergency students have received instruction both in technical agriculture and in teaching principles and methods. The requirement of the State Board of Education that all high school students benefiting by the Smith-Hughes fund should conduct a project involving the raising of animals or the production of some crop necessitates the training of teachers to supervise these projects.

Beginning June 30, 1919, as a part of the University of California Summer Session, twenty-three teacher training courses in agriculture were offered at the University Farm and certain courses were offered at the Citrus Experiment Station. As heretofore, courses in agriculture were offered at the Summer Session at Berkeley and at Los Angeles.

Another work undertaken by the Department of Agriculture during the year at the request of the Federal Board for Vocational Education is the education of disabled soldiers. Short courses were conducted for the men from June 9, 1919, to September 27, 1919.

A significant activity of the State of California, with which the

* For report of Departments of Anatomy, Biochemistry and Pharmacology, Medicine, Neurology and Psychiatry, Obstetrics and Gynecology, Pathology and Bacteriology, Pediatrics, Physiology, and Surgery, see the report of the Medical School beginning on page 132.

Department of Agriculture is connected both directly and indirectly, is land settlement, which had its first concrete development in California in the State Land Settlement Colony at Durham. The initial success of this colony has led the Legislature to provide an appropriation of \$1,000,000 and to provide for an initiative vote on a bond issue for \$10,000,000, these appropriations to be in the nature of a revolving fund under the provisions made for repayment with interest.

An important addition to the personnel of the staff was made during the year by the appointment of J. C. Whitten, formerly Professor of Horticulture in the University of Missouri, as Professor and head of the Division of Pomology. R. L. Adams, Professor of Farm Management, has been placed in charge of the newly created Division of Farm Management. During four months of the year Professor Adams was chairman of a committee which recommended a plan of reorganization of the Office of Farm Management, United States Department of Agriculture.

Nineteen members of the staff have returned from military service. Several others remain in the service, while still others, although discharged from the army, have resigned to enter other agricultural fields.

Elwood Mead, Professor of Rural Institutions, has continued to serve as Chairman of the State Land Settlement Board, and has been in frequent consultation with the Secretary of the Interior concerning the national program for the so-called Soldier and Sailor Settlement Act. He has also had much to do with popularizing and shaping legislation on land settlement. Frank Adams, Professor of Irrigation Investigations, E. B. Babcock, Professor of Genetics, and Walter E. Packard, Assistant Professor of Agricultural Extension, are on leave lecturing in France on agriculture under the educational program of the United States Army. R. S. Vaile, Assistant Professor of Orchard Management in the Citrus Experiment Station, has returned from a mission to Persia. W. B. Herms, Associate Professor of Parasitology, and S. B. Freeborn, Assistant Professor of Entomology, recently released from the army, have resumed coöperation with the State Board of Health in mosquito abatement. M. E. Jaffa, Professor of Nutrition, continues to pass upon the purchase of food supplies for the State Board of Control and to supervise the dietary of the inmates of the eleemosynary institutions of the state. The State Food and Drug Laboratory, in charge of E. J. Lea, Associate Professor of Nutrition, reports directly to the State Board of Health. Professor R. L. Adams and Tracy R. Kelly, Instructor in English and History at the University Farm School, maintained an office in the rooms of the State Council of Defense as state labor specialists for the United States Department of Agriculture. Professor Adams also acted as Secretary of the Committee on National Resources and Food Supply of the State Council of Defense. C. W. Woodworth, Professor of Entomology, returned in January from his Sabbatical leave at the University of Nan-

king, China. W. F. Gericke, Assistant Professor of Soil Chemistry, spent his Sabbatical leave under Professor Livingston at Johns Hopkins University. H. S. Baird, Assistant Professor of Dairy Industry, spent his leave in the study of market conditions of dairy products in the United States Department of Agriculture and in study at the University of Wisconsin.

Hereafter the police powers in connection with the Fertilizer Control Act and the Insecticide Act, which have been in charge of the Director of the Agricultural Experiment Station, will be transferred to the newly created State Director of Agriculture.

A summary of the work covered by this department is as follows: Over 1500 analyses have been made by the Division of Nutrition, 2000 soil samples have been examined and 1414 letters written by the Division of Soil Chemistry and Bacteriology, 1077 inquiries by stock-owners and veterinarians concerning diseases of animals have been answered, and reports on 86 animals made by the Division of Veterinary Medicine. The Division of Dairy Industry analyzed 163 samples of cream, 115 of butter and 23 of cheese. J. C. Marquardt, Assistant in Dairy Industry, supervised for the United States Navy the manufacture of 159,273 pounds of butter from California. Three educational butter and cheese-scoring contests were held in different sections of the state during the past year. The Division of Pomology has conducted 251 demonstrations in pruning and 30 in fruit-packing with a total attendance of 7200. In coöperation with the State Board of Education, F. L. Griffin, Associate Professor of Agricultural Education, and S. H. Dadisman, Assistant Professor of Agricultural Education, visited during the year all the high schools maintaining instruction in agriculture. Sixty-four designs of farm structures have been prepared by the Division of Agricultural Engineering, and 971 sets of blue-printed plans have been distributed. During the war emergency period, practically the entire effort of the Division of Irrigation was spent in coöperation with the United States Food Administration and the State Railroad Commission in an effort to obtain the maximum utilization of the irrigation water supply and the production of food.

The various agricultural industries are being served through the connection of members of the staff with outside agencies. In coöperation with the Dairy Division of the United States Department of Agriculture, the Child's Bureau of the United States Food Administration and the Indian Bureau of the United States Department of the Interior, H. E. Van Norman, Professor of Dairy Management, worked out plans for the educational exhibit of the National Dairy Show held at Columbus, Ohio, in October, 1918. In addition to acting as Chairman for the Livestock Commission for the Federal Food Administration for California, G. H. True, Professor of Animal Husbandry, gave much of his time as Director of the California Cattlemen's Association. J. I. Thompson, Associate

Professor of Animal Husbandry, has served continuously as Secretary-Treasurer of the California Swine Breeders' Association since its origin, except for one year while absent from the state. Professor R. F. Miller held the same position with reference to the California Sheep and Wool Growers until his resignation from this institution January 1, 1919. H. J. Webber, Professor of Plant Breeding, was elected President of the Citrus Institute organized and held in connection with the Orange Show at San Bernardino. For several years Professor Webber was President of the California Avocado Association.

About 7000 tests of over 1500 pure bred dairy cattle owned by 103 different breeders have been made under the direction of F. W. Woll, Professor of Animal Nutrition, during the year. For eight years, the department through its Division of Veterinary Medicine, has been investigating and distributing cholera serum, during which time 10,612,840 c.c. have been sold and used to treat approximately 388,770 hogs. Private firms have now become fully able to supply this serum, which is done under the inspection and control of the United States Department of Agriculture. During the year, 231,078 doses of chicken pox vaccine were distributed to poultry raisers. Including the work done for the San Francisco and Alameda County Medical Milk Commissions, 3213 head of cattle have been tested for tuberculosis.

A survey of soils of California is being carried on by the Division of Soil Technology in coöperation with the United States Department of Agriculture. Since 1916, 18,350 square miles have been surveyed. Reconnaissance surveys have been completed covering the middle San Joaquin Valley area and upper San Joaquin Valley area and the central southern California area. Detailed surveys have been completed covering the El Centro, Grass Valley, Santa Maria, Ventura, and Willits areas. To date, reconnaissance or detailed surveys have been made covering about 25 per cent of the total area of the state, probably about 60 per cent of the land in farms.

Upon the request of the State Council of Defense, a committee of the Department of Agriculture, with Professor H. E. Van Norman as Chairman, prepared a series of recommendations on reconstruction for Governor Stephens.

Numerous meetings of breeders' associations and stockmen have been held at the University Farm. Auction sales were also held there by the California Shorthorn Breeders' Association, Pacific Coast Hereford Cattle Breeders' Association, and the Western Berkshire Congress. At the shorthorn sale, a yearling shorthorn bull, California Model, full brother to California Marvel, sold for \$5500 to the Conway Ranch, Woodland, thus establishing a record price for a college bred bull, as well as for a beef animal on the Pacific Coast.

The lease in 1917 for a period of ten years of 300 acres of land adjoining the University Farm, Davis, makes available nearly 1100 acres for

the work of that institution. It has added notably to the field crop investigations, ninety acres having been assigned to the Division of Agronomy for this purpose.

The Citrus Experiment Station, Riverside, containing about 300 acres of tillable land, came into the possession of the University in 1916. A citrus grove of seventy acres, intended for fertilizer, cultivation, pruning, and irrigation experiments, was planted in 1917. A citrus variety orchard of about 500 different varieties and forms have been planted. About 100 seedling avocados and several hundred seedling guavas are being grown for the purpose of selecting improved varieties. About 130 hybrid peach trees, grown from hybrids made by Professor E. B. Babcock have been planted.

Aside from the students in the Students' Army Training Corps, during the first semester there were relatively few University students of Agriculture, of which a considerable proportion were women. During the second semester, the total enrollment of University students has risen to 397. In addition to the University students, 163 students were enrolled at the University Farm School, 298 in farmers' short courses, and 76 in short courses for rehabilitation of soldiers. Four four-day special poultry institutes were held by the Division of Poultry Husbandry at San Gabriel from May 26 to 29, and at San Diego from June 3 to 6, with about 300 persons in attendance at each. In addition to the bee-keeping short course held at the University Farm, Davis, from December 2 to 7, short courses were held at Visalia, from December 9 to 14, and at San Diego from November 25 to 30.

The number of correspondence students in agriculture has been less than in former years. Nevertheless, 1448 students have completed 1760 courses during the year. The total number of students enrolled in correspondence courses in agriculture since the beginning of this instruction is 16,878. There are twenty-seven correspondence courses in agriculture which have been completed during the year, the most popular in point of number taken being poultry husbandry, swine husbandry, vegetable gardening and alfalfa culture. Instruction in agriculture at San Quentin has been interrupted by the influenza and other circumstances. Ten lectures were given with an average attendance of 225 persons. Many calls for lectures came to members of the staff in addition to the normal extension work. O. J. Kern, Assistant Professor of Agricultural Education, has, for example, during the year given forty-two lectures, attended by more than 8000 people. Since October 1, 1913, Professor Kern has given 622 lectures and in that time has addressed more than 115,000 persons, largely upon school gardens and community schools.

An account of the research of the Department of Agriculture, so far as it is ready for publication, will be found in eleven bulletins and nineteen circulars distributed during the year and in the Annual Report

of the Director published separately. These publications are no longer mailed to a general list of addresses, but are sent to citizens free upon request. The following list gives the publications of the year:

BULLETINS

- Bul. 297. The Almond in California.
- Bul. 298. Seedless Raisin Grapes.
- Bul. 299. The Use of Lumber on California Farms.
- Bul. 300. Commercial Fertilizers.
- Bul. 301. California State Dairy Cow Competition, 1916-18.
- Bul. 302. Control of Ground Squirrels by the Fumigation Method.
- Bul. 303. Grape Syrup.
- Bul. 304. A Study of the Effects of Freezes on Citrus in California.
- Bul. 305. The Influence of Barley on the Milk Secretion of Cows.
- Bul. 306. Almond Pollination.
- Bul. 307. Pollination of the Bartlett Pear.

CIRCULARS

- Cir. 203. Peat as a Manure Substitute.
- Cir. 204. Handbook of Plant Disease and Pest Control.
- Cir. 205. Blackleg.
- Cir. 206. Jack Cheese.
- Cir. 207. Neufchatel Cheese.
- Cir. 208. Summary of the Annual Reports of the Farm Advisors of California.
- Cir. 209. The Function of the Farm Bureau.
- Cir. 210. Suggestions to the Settler in California.
- Cir. 211. Saving Raisins by Sulfuring.
- Cir. 212. Salvaging Rain-Damaged Prunes.
- Cir. 213. Evaporators for Prune Drying.

LEAFLETS

- Home Vegetable Canning Recipes.
- Home Pickling Recipes.
- Home Preparation of Fruit Juices.
- Emergency Farm Labor Agencies.
- Sugar Saving Suggestions.
- Plant Cover Crops Now.
- Farmers' Coöperative Marketing Associations.
- Grain and Hay Fires in California.

Anthropology.—Difficulties felt by the Department of Anthropology because of the war, in disruption of the schedules and loss of staff members and students, were overcome readily after the signing of the armistice, and the end of the academic year found the department functioning normally again.

The Museum, which still remains in its provisional quarters in San Francisco, has continued its customary activities. Seventy-two public lectures were given by Associate Curator E. W. Gifford and eleven by

other members of the staff and collaborators during the year. More than 7000 children, representing 186 classes from the public schools, visited the Museum for these lectures and demonstrations. Including these children the total number of visitors up to May 25, 1919, was 12,424.

The collection of the Museum has been enriched by donations of specimens by Mr. M. E. Beall, Mrs. E. E. Caswell, Mrs. Katherine Hooker, Mr. Miles Tower and Captain J. Marius Scammell.

Almost irreparable is the loss in the death of Mrs. Phoebe Apperson Hearst, founder and constant supporter of the Museum.

Among the investigations conducted during the year were those among the Wappo, Pomo and Wintun Indian tribes of northern California, the Papago of Arizona and the Zuni of New Mexico. Publications in the University series of American Archaeology and Ethnology have aggregated about 600 pages, and with the inclusion of papers now in press extend into the seventeenth volume.

Architecture.—While an increase in the attendance in this department has been noted in the past year, the registration is not yet back to the pre-war standard.

The work of the first semester was unavoidably disrupted, from the viewpoint of the department, by the Students' Army Training Corps. Several courses, intended and conducted to meet certain war demands, did not prove altogether satisfactory. The second semester, however, has been much more gratifying and successful—sufficiently so to make the year's record satisfactory. An exhibition, held at the close of the year, showed that, although they had produced no brilliant projects, the students had solved their various problems with a certain degree of credit.

As has been the custom, the Exhibition Hall of the department has been open to the public continuously during the year. The attendance aggregated 4000.

An important and valuable gift of a large scale model, showing part of the San Francisco Public Library, has been received from Mr. George W. Kelham, architect, and Mr. Gorsuch, modeler, both of San Francisco.

The following are suggestions of the department's most pressing needs: a fireproof room for the department library; undergraduate scholarships and graduate fellowships; prizes for distinguished work for bachelors' and masters' degrees and degrees of graduates in architecture.

Astronomy.—The enrollment in undergraduate courses in the Department of Astronomy has been as large as in previous years. The usual courses were given, and in addition, a course in Navigation and Nautical Astronomy for members of the Naval Unit. This course was extended to cover the same ground as that given at the United States Naval Academy at Annapolis. Due to the absence of Dr. A. O. Leuschner,

Professor of Astronomy and Director of the Students' Observatory, and of Dr. R. T. Crawford, Professor of Practical Astronomy, graduate and research work in general was necessarily curtailed. The most necessary orbit computations, however, were continued by Mr. H. M. Jeffers, at that time Instructor in Astronomy.

Until shortly after the signing of the armistice the department was in close coöperation with the University Extension Division in the courses preparatory for naval service, with the Commissioned Officers' School of the Naval Training Station at Yerba Buena Island, and also, to a certain extent, with the United States Shipping Board Navigation School in San Francisco.

Professor A. O. Leuschner was commissioned Major in the Chemical Warfare Service of the Army in October, 1918. At the signing of the armistice he was detailed to the National Research Council as Chairman of the Physical Sciences Section. Professor R. T. Crawford has continued as Major in the Air Service, with assignment as Executive Officer at the United States Army Balloon School, Fort Crook, Nebraska.

Astronomer H. D. Curtis of the Lick Observatory conducted the Summer Session in Astronomy. This was entirely devoted to Navigation. During the second half-year Astronomer W. H. Wright, of the staff of the Lick Observatory, was engaged in instruction in the Berkeley Astronomical Department.

Botany.*—Emergency investigations undertaken during the year 1917-18 have occupied the attention of the staff of the Department during the past year. The search for a supply of rubber in native west American plants has been brought to a successful conclusion. Dr. H. M. Hall, Associate Professor of Economic Botany, and Dr. T. H. Goodspeed, Assistant Professor of Botany, who have been conducting this investigation, report the finding of a supply of rubber in wild plants sufficient to meet the needs of this country for a time, at least, in the event of another national emergency. The Committee on Scientific Research of the State Council of Defense for California appropriated funds sufficient to carry on the necessary field studies, while the laboratory facilities of the Department were employed for making the chemical and microscopical examinations of the plants collected. The department has, in the past, been called upon to furnish a large number of determinations in the native flora and to advise those who were interested in the use of native plants for food and other purposes.

Donations to the Herbarium have been less in the past year than in former years, totaling 1393 specimens, which include both material for incorporation into the general collection and for use as exchange material.

* A list of gifts to the Department of Botany, its garden, museum and herbarium will be found on page 177.

The need of securing provision for a large amount of material to be used in exchange is urgent. The interest in plant introductions is general in California, and the people of the state are making use of the collection composing the Herbarium and of the services of the staff in increasing degree. To meet the prospective needs it is very desirable that the representation in the Herbarium of floras of the Pacific countries other than western North America be largely augmented by securing exchanges from herbaria abroad. In addition to the exchange material received in the past year from various people of the state, including the members of the department, the Herbarium has acquired accessions from similar institutions in return for material sent from the University Herbarium.

Another way in which the collection is demonstrating its value is by the loan of material for purposes of research to institutions both within the state and beyond its borders. During the past year material has been sent to a number of institutions for this purpose, among them being the University of Illinois, the National Herbarium at Washington, Leland Stanford Junior University, and the Museum of History, Science, and Art in Los Angeles. To protect properly the collection from insect attack and the risk of loss by fire, some years ago the policy was adopted of purchasing a number of steel cases annually. At present less than half of the total number of sheets (220,000) are so protected and there are on hand ready for mounting, and for which at present no storage facilities are provided, enough specimens to raise the total collection to a quarter of a million sheets.

The need for additional space to accommodate the increasing number of students under instruction in this department was in part met two years ago by the taking over of the small building known as the Chemistry Annex. With the return to a normal enrollment in the University the need for a further increase in number of rooms will be keenly felt. The Botany Building, which now houses the laboratories of phænogamic, economic, and elementary botany, should be remodeled. The construction of a building for use by the Department of Botany would, however, more adequately meet its needs in that the necessary coördination of the different branches of work, now carried on in three different buildings, would be achieved.

Provision for adequate instruction in plant physiology is the outstanding need of the department at the present time.

As in past years, the recommendation is made that the Botanical Garden be moved from its present location to a more isolated site such as has been selected in Strawberry Cañon.

Celtic.—During the year the Department of Celtic has pursued its usual quiet but interesting course. The number of students enrolled in the course has not been affected by war conditions.

Chemistry.—Members of the Department of Chemistry who were in military service in this country, in England and in France, were able to return in time to take part in the work of instruction of the second semester. The personnel of the Department, as it existed before the war, has now been restored, except for the loss of Dr. William Lind Argo, Instructor in Chemistry, whose death in France deprives the University of a most successful teacher and a scientist of brilliant promise.

In memory of her son, Bruce Howard, of the Class of 1919, who died in military service, Mrs. Helen L. Howard has donated the sum of \$10,000 as a scholarship fund for students in chemistry. The DuPont de Nemours Company has renewed for the coming year its fellowship of \$700 for a graduate student in chemistry. Another industrial firm has offered a very generous fellowship, the terms of which will shortly be published. The National Research Council has announced a number of fellowships in physics and chemistry of large annual stipend, with the purpose of inducing men of unusual ability who have received the Doctor's degree to continue in pure research. It is gratifying to record that two of the three appointees in chemistry have been assigned to work in this laboratory.

Graduate work, which suffered heavily during the war, promises during the coming year to reach a higher state of development than at any time in the past, and several new lines of investigation will be prosecuted. The development of research, which the department has endeavored in every way to encourage, requires a financial outlay which cannot be satisfactorily met by the normal appropriation for the upkeep of the laboratory. It is urgent that some special provision be made for the needs of research.

Civil Engineering.—Diminution in the size of the staff of the Department of Civil Engineering because of the war necessitated a restriction in the number of courses offered during the past year. Thus combinations of different sections in structural engineering for architects and engineers and sections in surveying for engineers, architects and agricultural students were made. So, also, reduction was made in the work in Sanitary Engineering.

It is expected that A. J. Eddy, Assistant Professor of Civil Engineering, W. F. Langelier, Assistant Professor of Sanitary Engineering, and C. G. Hyde, Professor of Sanitary Engineering, all of whom have been absent in war work of various sorts, will return to the staff of the department during the academic year 1919-20. With their return, and the registration of many new students expected in the fall, the work of the Department will be returned to its pre-war standard.

As a result of the activities of the war period the Engineering Council has authorized the continuance of a special curriculum in military

engineering as a four years' course in the College of Civil Engineering, which will lead to the degree of Bachelor of Science in Civil Engineering. The Department of Civil Engineering is directly interested and concerned with this offering.

As has been suggested, it is expected that the enrollment in Civil Engineering will increase with the return to peace conditions. With the increased responsibilities these will bring, the staff should be strengthened, not so much by an increase in the number of instructors, as by the selection of teachers entitled to full professorships in certain of our sub-departments where instruction is now in charge of men with the rank of instructor or assistant professor. Full professorships in Architectural Engineering, Surveying, and Geodesy, and in the Testing Laboratory should be established.

Property at Santa Cruz used for the Summer School of Surveying has been re-released for a period of five years beginning April, 1919. It is hoped that by the time of the expiration of our lease in April, 1924, the University of California shall have acquired its own property.

There is at present urgent need for more space to accommodate desired and necessary expansion of some sub-departments in Civil Engineering. The long-held hope that a temporary relief might be had when the Department of Anatomy vacated the old mining laboratories seems as far from realization as it ever has been. What is needed is a new building to provide proper drafting-room and laboratory facilities and additional lecture halls.

Were the old mining laboratory building freed for Civil Engineering development, or a new permanent edifice erected, needed expansion in our municipal, sanitary and cement laboratories would become possible. Growth in these three directions has been stopped for the past eight years. Again, it has been hoped that the Department of Irrigation would be housed eventually in the same building with Civil Engineering. Special hydraulic equipment to be used jointly by sanitary and irrigation engineering instructors cannot be forthcoming until there is room space, such as the anatomy building or a new building would offer. In a state where irrigation and sanitary engineering are so prominent it is a misfortune that laboratory space is so limited.

Drawing and Art.—There have been no significant changes in the Department of Drawing during the past year. The total enrollment has increased slightly, making some of the classes too large for the necessary individual instruction. The only remedy for this is the appointment of more assistants. Since the close of hostilities there has been a marked increase in the work accomplished, even surpassing that of pre-war times.

Economics.—During the past year many of the members of the Department of Economics have been engaged in aiding the various military activities of the United States Government. Dr. H. R. Hatfield, Professor of Accounting on the Flood Foundation and Dean of the College of Commerce, has been absent acting as head of the Division of Planning and Statistics for the War Industries Board. During the first semester, Dr. Stuart Daggett, Professor of Railroad Economics on the Flood Foundation, was with him as his assistant. Dr. Lincoln Huntchinson, Professor of Commerce on the Flood Foundation, was first with the War Trade Board, but later was associated with the United States Food Administration in Prague, Bohemia. Dr. Jessica B. Peixotto, Professor of Social Economics, was absent during the greater part of the year as Executive Chairman of the Child Welfare Department of the Women's Council of the Council of National Defense. Mr. F. R. Macaulay, Instructor in Economics, was also on leave during the year as District Statistician of the Emergency Fleet Corporation.

Although materially handicapped by these absences, the department has been able to offer the greater part of its courses through the temporary appointment of Professor E. D. Hunton of the University of Wyoming, who has given work in Statistics and Business Administration; Mr. Victor Montgomery, Actuary of the State Insurance Commission, in Actuarial Science; Miss Caroline Schleef in Housing Problems; and Major G. W. Fishback in Foreign Trade with Latin and South America. During the second semester, Professor Daggett, Acting Dean of the College of Commerce, arranged an excellent series of lectures in the field of Foreign Trade, given by prominent San Francisco business men. In coöperation with Mr. Warren Gregory, an alumnus of this University, a series of evening talks was arranged, given before the seniors of the College of Commerce, by leaders in the local business world. These informal addresses were devoted to a discussion of the business opportunities for the graduates of the College of Commerce. During the summer, Dr. Ira B. Cross, Associate Professor of Economics on the Flood Foundation, conducted a six weeks' war emergency course in Employment Management under the direction of the War Industries Board. He also assisted in the administration of the Students' Army Training Corps in so far as the Ordnance, Tank and Transport branches of the Army were concerned.

Education.—No report was submitted by this department.

English.—The principal development in the Department of English during the past year has been the evolution of a plan whereby the freshman course in English Composition, hitherto known as English 1A-B, will meet more effectively the preparation and needs of incoming students.

Beginning with August, 1919, an examination in Subject A (English Composition) will be prescribed for all entrants to the colleges at Berkeley. Students who pass the examination with grades of 1 or 2 will not be required, but will be advised, to continue their training in oral and written composition. An election of courses will be provided. Thus, for students in the colleges of Agriculture and Commerce there will be courses in English in Commercial Practise; for students in the Colleges of Mechanics, Mining, Civil Engineering, Chemistry, and Medicine, courses in Oral and Written Reports for Engineers and other Scientific Practitioners; for students in the colleges of Letters and Science, courses in Advanced Exposition and Argumentation or Public Speaking. Students who pass the examination in Subject A with a grade of 3 will be required to take a course in Exposition during their freshman or sophomore years. Students who receive the grades of 4 or 5 in Subject A will be conditioned in the subject and will not be granted the Junior Certificate until the examination has been passed. They will be required to take, without credit, a course in English Composition, especially designed to meet their needs, and calling for one period of class instruction per week together with written exercises and conferences. They must continue the course until they have passed Subject A. No student who has not passed Subject A will be admitted to any University course in oral or written composition other than the course described above save in the case of foreign students who may be permitted to elect a course especially designed for them.

Another important development of the year has been the revision and simplification of the program for systematic study in English and for honors. The program as it now stands provides for the presentation to and approval by the department of a schedule of courses in English aggregating 24 units at the beginning of the Junior year and the passing, in the senior year, of an examination in the history of the literature, English Final Examination No. II. Considerable latitude in the revision of the original schedule and the substitution of units from other courses, especially those of the Department of Public Speaking, will be allowed. Students registered for honors may attain honors in English by completing the program of systematic study with distinction.

During the first semester the Department devoted the resources of its freshman English staff to the training in English of members of the Students' Army Training Corps, carrying on the work effectively despite the many interruptions caused by military assignments, influenza and other unexpected difficulties.

Under the direction of S. J. Hume, Assistant Professor of Dramatic Literature and Art, classes in dramatic composition have been conducted by the department. Professor Hume's work in the classroom and in the Greek Theatre promises to develop into a School of Drama with training

in play-construction, acting, stage-management and direction, as well as scholarly investigation into problems of criticism and the history of dramatic forms. Professor Hume has directed the department's series of public readings from English Literature during the current year. He also managed a state-wide competition of high school students in the reading and interpretation of Shakespeare. It is hoped by the department to make this an annual event.

Mr. Witter Bynner, Instructor in English, has conducted a course in the Writing of Verse and has further contributed to the poetic enthusiasm of the University community by the delivery of his *Canticle* in the Greek Theatre. He also directed a public celebration of the hundredth anniversary of the birth of Walt Whitman.

Dr. B. P. Kurtz, Associate Professor of English, and Mr. Guy Montgomery, Instructor in English, have established courses in the literary study of primitive culture. This work will be continued and extended, plans being in hand for the presentation of additional courses in investigation of folk-lore problems.

Geography.—During the past year the work of the Department of Geography has been primarily to participate in the general effort to make the University of service to the community and to the nation in the period of stress. The special courses offered to that end were Oceanography and Meteorology, for students in the Naval Unit, and Military Geology, which, as outlined by the Circular of the War Department Committee on Geology and Geography, closely approximated a geography course as formerly given. Other courses were shaped to show more completely to what extent the elements in the geographical environment of a people affect their work and their relations to other peoples. The value of such training has been emphasized by graduates in active service, who in their letters have expressed their appreciation of the usefulness of their knowledge of various geographical factors.

Geology and Mineralogy.—In addition to their regular work of instruction, members of this department have devoted much of their time and energy during the past year to the war minerals investigation conducted under the auspices of the State Council of Defense, the United States Bureau of Mines, and the United States Geological Survey. This work was done through a Committee on Geology and Mineral Resources established the first week in May, 1917, by Dr. David P. Barrows, then chairman of the Committee on Scientific Research of the State Council of Defense. As originally constituted the Committee on Geology and Mineral Resources included Dr. J. C. Branner, chairman; G. D. Louderback, Professor of Geology; and F. W. Bradley. As reorganized and enlarged by Professor A. O. Leuschner, acting chairman of the Committee on Scientific

Research, in April, 1918, the Committee on Geology and Mineral Resources included F. W. Bradley, Dr. J. C. Branner, L. H. Duschak, D. M. Folsom, Fletcher Hamilton, G. D. Louderback (chairman), T. A. Rickard, and Bailey Willis. A full report of the work of the committee is filed with the State Council of Defense.

In the first semester of 1918-19 a course in military map reading and topography was organized for students in the Students' Army Training Corps Unit and courses in military geology and geography were partially organized.

During the spring half-year double courses in mineralogy and petrography were offered and several fundamental first term courses were repeated to give students an opportunity to enter the regular courses next year.

The seismographic station has been maintained as usual, and the records of earthquakes as shown by the seismographs in Berkeley and at Mount Hamilton have been prepared for publication.

Dr. A. C. Lawson, Professor of Mineralogy and Geology, who has been absent during the year on leave, sailed to France in November, 1918, and has been engaged since that time in Red Cross work in a base hospital.

German.—In consequence of war conditions the enrollment in the Department of German declined sharply from 898 in the fall of 1917 to 320 in the fall of 1918. Statistics collected by the Department of German of the University of Wisconsin show that this loss (64 per cent) is approximately the same as the average for the eighteen leading universities of the country.

Greek.—The staff of the Department of Greek has been increased in the last year to include four members, with the appointment of Dr. Roger M. Jones as Instructor in Greek. The department staff was further augmented by Professor Paul Shorey of the University of Chicago who, as Sather Professor of Classical Literature during the second half-year, conducted two excellent courses on Aristotle and Aristotelianism and on Greek and English Poetry.

In keeping with the policy of the department of providing instruction in as many phases of Greek civilization as possible, new courses were offered by Dr. Jones on the Philosophy of Plato, and by Dr. G. M. Calhoun, Assistant Professor of Greek, on Greek Law. In order to strengthen the work in the graduate division, the department issues annually a special announcement of courses which is widely distributed. The effects of this announcement are being shown in the encouraging outlook already visible for graduate students next year.

Two volumes in the Semicentenary Publications were issued by members of the department: "Solon, the Athenian," by Dr. Ivan M. Lin-

forth, Associate Professor of Greek, and "The Greek Theater of the Fifth Century Before Christ," by Dr. James T. Allen, Associate Professor of Greek.

On February 7, 1919, Professor Emeritus Edward Bull Clapp died at the age of sixty-three. He had been in the service of the University for twenty-five years.

History.—The outstanding event of the year for the Department of History was the death on April 16, 1919, of H. Morse Stephens, Sather Professor of History. In his decease the department and the University have suffered an incalculable and an irreparable loss. In 1902 Professor Stephens came from Cornell University with an already established reputation for great scholarship and unusual ability as a lecturer. During his seventeen years of service here he devoted himself to teaching, lecturing, and promoting historical scholarship. As a teacher and public lecturer he exercised a personal influence unequalled by any other professor. Under his leadership the University acquired the Bancroft Library, the Native Sons' Fellowships in Pacific Coast History were founded, and the California Historical Survey Commission was established. He can never be replaced, but his influence is permanently stamped upon the department and the University. The Department of History regards with the greatest satisfaction the plans already formulated for establishing the Henry Morse Stephens Travelling Fellowships in European History, and feels that no more fitting memorial could be erected to the memory of the great man who did so much for the cause of historical study and teaching on the Pacific Coast.

Next in point of interest to the death of Professor Stephens was the organization by him and his associates of the "War Issues" course for the Students' Army Training Corps, a course which achieved distinction throughout the country. More than seven hundred students were enrolled, and were divided into four lecture groups. This work was done as "war work," without additional pay, by professors and assistants alike. After the armistice, Professor Stephens and K. C. Leebrick, Assistant Professor of History, continued the work as a course in "Peace Issues in the Light of their Historical Background," each lecturing once a week, the third hour being filled by some other member of the department or by an outside lecturer.

The advanced teaching and research work in European History has been much improved by the segregation in Room 129 (Library) of a large collection of sources of European history of which L. J. Paetow, Associate Professor of Medieval History, is Curator. The room now contains about 5000 volumes of selected materials, and provides seats for seventy-five students. It is hoped that when the books of Professor Stephens become available the Department of History will be permitted to add to

the collection those most useful to students of European History. In the same connection, the executors of the will of Professor Stephens have been asked to donate to Room 130, his seminar room, and that part of the Library which his presence has made memorable to many generations of students, such pictures, ornaments, and other personal belongings as will be the best reminders of his inspiring labors there.

Because of war conditions the year was an unusually busy one for all members of the department. In spite of these circumstances the work of research and publication went on, thus continuing a scholarly output which has given the department high standing among the universities of the country. E. I. McCormac, Associate Professor of American History, has completed his two-volume biography of James K. Polk, which is now ready for publication. It will prove, no doubt, to be the authoritative treatment of the subject. Professor Paetow continued to serve as secretary of the department, a post which he has filled admirably for over seven years. By way of research he laid the bibliographical foundations for his projected work on the University of Paris during the Middle Ages. F. J. Teggart, Associate Professor of History, was absent during the entire year, engaged in war work in Washington, D. C. W. A. Morris, Associate Professor of English History, has continued his research in the history of the Office of Sheriff in Medieval England. Two chapters of the work were published in 1916 and 1918 in the *English Historical Review*. Other chapters are practically in final shape, and three remain to be done before the book is complete. C. E. Chapman, Assistant Professor of Latin-American and Californian History during the first semester, assisted in the "War Issues" course in addition to his regular teaching. During the year he published two books and a number of articles in magazines. The books are *Catalogue of Materials in the Archivo General de Indias for the History of the Pacific Coast* and *The American Southwest* (University of California Press) and a *History of Spain* (Macmillan). Both of these have been well received by reviewers. For his scholarly work Professor Chapman recently has been honored by election to the Hispanic Society of America. In addition to these activities, he has served on the editorial board of the *Hispanic American Historical Review*, a periodical of which he was the principal "founder." Furthermore, he has served efficiently as chairman of the University Committee on Relations with Hispanic America, which has planned under his leadership for an exchange of professors with Chile, of which he will be the first, it having been arranged that he will go to Chile for the calendar year 1920, some Chilean professor to be sent here in his place. Besides conducting his regular courses and serving as Assistant Curator of the Bancroft Library, H. I. Priestley, Assistant Professor of History, assisted in the "Peace Issues" course during the second half-year. In the summer of 1919 Professor Priestley spent

two or three weeks in Mexico, during which he visited numerous leading cities of the Republic in quest of historical materials bearing on his courses and researches. After his return from Mexico he was honored by being made a member of the Sociedad de Historia, Geographia y Estadística de Mexico, the most scholarly society of the Republic.

Professor Leebrick's part in the "War Aims" course and the "Peace Issues" course has been set forth above. In the middle of April he took over a large part of the courses of Professor Stephens, which, in addition to his own classes, was a very heavy burden. Besides, Professor Leebrick performed a large amount of war work of various sorts.

J. J. Van Nostrand, Assistant Professor of Ancient History, supervised sections in the "War Aims" and "Peace Issues" courses, and has continued his research on the public land system of the Romans under the Empire.

Herbert E. Bolton, Professor of American History, on the death of Professor Stephens, became Acting Head, then Chairman of the Department. He was a member of the Advisory Cabinet of the State Council of Defense, member of the War History Committee of the State Council of Defense, and Four-Minute-Man. He has been reappointed member of the California Historical Survey Commission, on which he has served since its beginning. He has continued his services as member of the Council of the American Historical Association, and as editor of the *University of California Publications in History*. In the course of the year he has published *Father Kino's Historical Memoir* (A. H. Clark and Company, 2 vols.), and several articles in magazines.

The department desires here to express its appreciation for the continuation of the annual gift of \$3000 by the Native Sons of the Golden West for the support of the Native Sons Fellowships in Pacific Coast History.

During the year two volumes were added to the *University of California Publications in History*, namely, Davidson, *The Northwest Company* (Vol. VII, 1918), and Chapman, *Catalogue of Materials in the Archivo General de Indias* (Vol. VIII, 1919). Other volumes, the work of our graduate students and of our faculty members, are now in press. This series of historical publications has now an established reputation throughout this country and abroad.

Home Economics.—Of especial interest during the past year has been the work of the Department of Home Economics in the offering of war courses. Principal among these courses was that in Occupational Therapy (the training of Reconstruction Aides) which was given for three successive terms and resulted in the placement of twenty students as Reconstruction Aides in military hospitals in the United States and France. Most of these appointments were permanent. This division also conducted all the correspondence with the Surgeon General, Division of

Reconstruction, at Washington, regarding applications for appointments as Reconstruction Aides in Occupational Therapy in military hospitals, writing hundreds of letters regarding the many applicants interviewed, credentials verified, and appointments secured.

A course in Red Cross work was organized with Miss Evaline Cutler as Student Director and Instructor. Students in this course finished garments for hospital and civilian relief as follows: utility cases, 1000; flannel gowns, 574; operating gowns, 150; children's black dresses, 150; children's gray dresses, 50. The full quota of surgical dressings, pneumonia jackets, absorbent pads, and bandages assigned to the University Red Cross Auxiliary were made. The daily average of students engaged in this work was 500, working in four sections of two hours each. The work was done according to factory system. In addition to this work in surgical dressings and hospital work, other Red Cross activities were carried on by a student committee, headed by Miss Mary Downie.

During the influenza epidemic 2300 gauze masks were made of material bought by the University Red Cross Auxiliary; and the men of the School of Military Aeronautics, the Students' Army Training Corps, and the Naval Unit were supplied twice daily with freshly sterilized masks. Student committees had complete charge of this work. Several students substituted nursing for the surgical dressing and garment work. Funds used for this work were raised through the operation of the Red Cross Book Shop, tag days, and candy sales.

The function of the University in relation to vocational education has been discussed by three members of this department with members of the Department of Education. The decision of the committee was that the training of teachers for correlated subjects under the Smith-Hughes Act was the work needed to be done here rather than the training of technicians in trade lines.

Considerable time has been given by the staff to outlining, remodeling and correcting correspondence courses and laboratory courses for sewing, dressmaking and house-furnishing for the Extension Division.

At the request of the California Children's Year Committee of the United States Department of Labor a bulletin of information called "Clothes for California Children" was written by Miss Mary F. Patterson, Associate Professor of Household Art, and illustrated by Miss Dorothy M. Landon. Twenty-five thousand copies of the pamphlet were printed and distributed by the State Printing Office in Sacramento in April, 1919. An illustrated syllabus for a course in millinery for high schools is in preparation by a graduate student.

The opening of a lower division course in Household Art this year, at first as a war emergency measure, has proved of real and permanent value in interesting women students at the beginning of their college careers in specific and well-planned courses of study leading to professional work.

This new course will be continued as a regular part of the curriculum hereafter.

The Textile course has been enlarged and enriched by the addition of a laboratory period for weaving and a study of textile design, color combination and the textures resulting from the use of certain fibres and their finish. The work of the course, interrupted suddenly in October, 1919, by the death of Miss Ethel E. Taylor, Instructor in Textiles, will be carried on in the fall semester of the coming academic year by Miss Anne Swainson. Another new appointment for the coming year is that of Miss Lucy Conant, a Boston artist of experience and reputation, as Lecturer in Design.

Chief among the needs of the department are an experimental house or apartment for the courses in House Furnishing and Household Management; a Museum of Decorative Art for graduate students engaged in artistic and historic research in connection with clothing and housing problems, and the moving of the collections of textiles, furniture, prints, etc., left by Mrs. Hearst to the University, to a place on the University campus within reach of the student body.

The outstanding feature of the work of the Division of Household Science during the year just closed has been its efforts in war service. The Volunteer Student Service, organized in California by Dr. Agnes F. Morgan, Assistant Professor of Household Science, at the request of the United States Food Administration and including a total of 920 students, was made up largely of University of California women enlisted through the war food courses offered by this division. Of the total number registered in the service 58 per cent rendered known, tabulated, and attested service to the State Food Administration. Their work may be summarized best under the various types of effort involved, thus: 316 bulletin boards on food conservation were established and maintained during the summer of 1918 and 134 were continued during the fall; 119 students voluntarily helped in food officials' offices in various clerical positions; 25 students helped in the placing of Food Administration posters; 35 students are on record as having done commercial food work and food production; an unknown number of speakers, demonstrators, directors and helpers in canning centers were supplied by the Volunteer Student Service; at least 10 successful exhibits on canning, drying, wheat saving and sugar saving were carried on, outlines and exhibit signs being prepared and supplied by the Berkeley unit; a speakers' bureau, from which four-minute speakers for clubs, schools and boarding houses were drawn, was organized and operated by Professor Morgan in conjunction with several members of the Public Speaking Department; a series of twelve bulletins containing the results of extensive experimentation on the use of various substitutes such as war breads, whale meat, fish, nuts, fats, etc., were published and widely circulated. A full history of

the Volunteer Student Service, consisting of 160 typewritten reports and copies of all bulletins has been filed in the Bancroft Library.

War conditions are to a considerable degree responsible for the institution of three new types of courses in the division; a course in dietetics for nurses offered each year as part of the preparation of young women for nursing training, especially with reference to public health work; the graduate year course for hospital dietitians leading to the M.S. degree, approved by the Academic Senate June 2, 1919; the extension training course for students planning to enter the fields of vocational education or rural extension organization under the provisions of the recent Smith-Lever and Smith-Hughes Acts of Congress.

This division has provided a ten-lesson correspondence course on the feeding of children for the University Extension Division at the request of the Children's Year Committee of California. Dr. Morgan's fourteen-lesson correspondence course in Normal Nutrition for Agriculture Extension use has been thoroughly revised and brought up to date in the past year.

Two reports published during the year have given the results of research in the study of almond proteins, the bacteriology of home canning processes, the precursors of creatine in the animal body and the extraction of vegetables for dietetics. Two others are ready for publication. Work planned in the development of animal feeding research has been hampered by the lack of sufficient funds and space for the building of proper animal metabolism cages.

A syllabus of a standardized course in food preparation for high schools has been compiled by this division and is now available for use by practice teachers and graduates. Practice teaching has been offered by the division at the University High School in Oakland, where members of the division staff have been assisted by Miss Margaret Mills. Four classes in cooking and dietetics were organized and taught at the University High School in the spring semester of 1919.

Miss Ruth OKey, formerly Instructor in Physiological Chemistry at the University of Illinois, has been appointed to fill a vacancy in the staff, as Assistant Professor of Household Science. Two instructors have been added in the last year, Miss Anna W. Williams, in charge of Food Economics and Analysis, and Miss Alice H. Metcalf, in charge of the dietetics laboratory work and coöperation with the University Hospital.

Hygiene.—The department was badly crippled on account of the demands made by the Government for scientific men for war service. Many of the professional courses had to be suspended. However, many other new courses were given to conform to the requirements and wishes of the War Department and of the American Red Cross. The Surgeon General of the Army made a request for nurses and Occupational and Reconstruction Aides; and two classes in these special subjects were

trained and placed in service. A course prescribed by the War Department in military hygiene and sanitation was given for the department by Captain Robert T. Legge, Professor of Hygiene and University Physician, for the Students' Army Training Corps Unit. A class of graduate nurses was trained in public health nursing for the first time in the history of the department. Red Cross classes in Home Care of the Sick, and First Aid were conducted both half-years and during the Summer Session.

Professor Legge, Dr. J. N. Force, Assistant Professor of Epidemiology, and Dr. A. M. Meads, Lecturer in Hygiene, were commissioned and served in the United States Army.

Irrigation.—The Irrigation Department has continued to develop the instruction in the several phases of Irrigation, namely, Irrigation Engineering; Agricultural Use of Water; Irrigation Institutions; Water Codes and Economics; Drainage, especially of water-logged irrigated lands; Operation and Maintenance of Irrigation Systems.

The courses are planned primarily to meet the needs of the students of the Colleges of Civil Engineering and Agriculture. Four undergraduate courses and one graduate course are given primarily for Civil Engineering students; four other undergraduate courses are given primarily for Agriculture students; one undergraduate and two graduate courses are offered in common to both classes of students. In addition, properly qualified students in the Colleges of Civil Engineering and Agriculture may elect their thesis course in the Department of Irrigation; and seminar work is offered for graduate students.

The enrollment in the Irrigation courses is largely dependent on the number of junior and senior students in the Colleges of Agriculture and Civil Engineering, and was very materially decreased, especially during the first semester of the year, owing to the withdrawal of students to enter war service. During the second semester instruction was more nearly normal and it is believed that with the development in irrigation throughout the west, which will accompany and follow the reconstruction period, the demand for instruction will be materially increased.

During the past year the small enrollment in some of the irrigation courses permitted the consolidation of some of the sections in courses which are normally given in two or more sections; and in doing so aid was given the Civil Engineering Department in its instruction.

As previously stated, the students electing courses in the Irrigation Department are largely from the Colleges of Civil Engineering and Agriculture. The Irrigation course in the curriculum of the College of Civil Engineering is parallel with the Railroad course and the Sanitary course. Close coöperation between the Civil Engineering and Irrigation Departments has always existed and has resulted in the building up of a strong course in Irrigation.

Jurisprudence.—The J.D. degree was granted in June, 1919, to ten candidates.

During the year 1918-19, the following Professors and lecturers were on leave: A. M. Kidd, M. C. Lynch, A. T. Wright, and Messrs. F. P. Griffiths, A. C. Matthew, A. G. Tasheira, J. U. Calkins, and H. H. Phleger. Professor Kidd served with the Red Cross in England; Professor Lynch acted as Assistant Agent of the Federal Reserve Bank, San Francisco; and Professor Wright was counsel for the United States Shipping Board and the United States Shipping Board Emergency Fleet Corporation, San Francisco. Mr. Griffiths was Section Chief for California of the Free Government Schools in Navigation. Mr. Calkins was Captain in the American Expeditionary Forces in France, and Mr. Phleger was Ensign, United States Navy, assigned to the U.S.S. Beal. Demands of private and public business required the absence of Messrs. Tasheira and Matthew.

To supply vacancies in the faculty, Professor Leslie J. Ayer of the Law School of the University of Washington, and Professor Evans Holbrook of the Law School of the University of Michigan, were appointed for the year. Professor Ayer gave courses in Military Law, Commercial Law, Contracts, Sales and Suretyship; Professor Holbrook in Crimes, Evidence, Persons, Agency and Bankruptcy. Mrs. Barbara N. Grimes, J.D. in 1915, was appointed Lecturer in Law, and gave the course in California school legislation.

Maurice E. Harrison, J.D., 1910, who has been on the staff of lecturers, has been elected Dean of the Hastings College of the Law. Professor Francis S. Philbrick has resigned to accept a professorship in the School of Law in Northwestern University.

Latin.—The establishment of the Students' Army Training Corps Unit and the generally unsettled state of affairs this year have reacted somewhat unfavorably upon such subjects as Latin. But, in view of the circumstances, the enrollment in the department has been very satisfactory. The number of contestants for the Richardson Latin Translation Prize was unusually large.

With the idea of strengthening the work in the schools, the department has continued the policy of sending out an annual circular to the Latin teachers of the state.

During the year various members of the department have been called upon to serve the University in additional capacities. L. J. Richardson, Associate Professor of Latin, has been acting head of the University Extension Division, and Dr. M. E. Deutsch, Assistant Professor of Latin, is Dean of the Summer Session in Los Angeles.

For the coming year the teaching force is strengthened by the appointment of Professor E. K. Rand, of Harvard University, as Sather Professor of Classical Literature.

Mathematics.—On the retirement at the close of the year 1917-18 of George C. Edwards, Professor of Mathematics, after thirty-five years of loyal service with the department, Professor Florian Cajori, for many years Professor at Colorado College, was appointed to the staff as Professor of the History of Mathematics. He has been entrusted with the care of students who are preparing to teach mathematics in the high schools and with the courses in the history of mathematics and of physics.

During the fall the demands of the Students' Army Training Corps Unit necessitated an increase in the number of elementary courses offered at the expense of several of the advanced courses. This enlarged program called for an increased number of teaching hours from every member of the staff. The Department is indebted to Mr. E. G. Stricklen, Instructor in Music, who volunteered his services in the emergency and taught a large class with eminent success.

In this period Dr. T. Buck, Assistant Professor of Mathematics, and Dr. M. W. Haskell, Professor of Mathematics, were given leaves of absence to enter the service of the War Department, the former as Lieutenant in the Ordnance Department and the latter as Assistant Educational Director of the Students' Army Training Corps Unit in the Eleventh District.

The Department has been obliged for a number of years to teach elementary classes in sections much too large for the best results. During the current year the prescription of mathematics in the College of Letters and Science has been held in abeyance. This has afforded a certain measure of relief but the number of students in Engineering, Chemistry, and Commerce is increasing with great rapidity and the department needs a considerable addition to its teaching staff if the instruction of those students is to be maintained at a high standard.

Mechanical and Electrical Engineering.—The department has, during the past year, added a number of new advanced courses of an important character particularly along engineering lines related to the rapid developments of the war period. These courses are primarily designed to meet the demands of the fundamental problems of transportation, in which the two most noteworthy developments have been the perfecting of the automobile and transportation through the air.

Both lecture and laboratory courses have been organized in Automotive Engineering and the laboratory for this work has been equipped under the direction of B. F. Raber, Associate Professor of Mechanical Engineering. In the field of Aeronautics, Dr. B. M. Woods, Assistant Professor of Theoretical Mechanics, has supervised the installation of the laboratory equipment in the frame building, which, until November 15, 1918, was used by the School of Radio Electricians. This temporary

building is now known as the Mechanics Annex. The equipment in the Aeronautics Laboratory includes a number of internal combustion airplane engines for testing purposes, a complete airplane, and a miniature windtunnel for research in the fundamental problems of air flow.

The developments in road and air transportation are, in reality, closely allied to the well-established courses in Marine Engineering and Naval Architecture. It has been found necessary to house the facilities for the work in all of these courses in the Mechanics Annex and, in addition, the work in Radio Engineering, which is closely allied to Electrical Engineering, has been done in this temporary building.

The greatest difficulty we have had in the past few years, and the situation is now more acute than ever before, is the lack of sufficient room in the present building, which has now been in use more than twenty-five years with practically no increase in the number or size of the rooms which are used for lectures, drafting, and laboratory work. The shop, laboratory and lecture room facilities are grossly inadequate, not only on account of their small size, but as the result of inadequate equipment. The seriousness of the situation is particularly apparent when due consideration is given to the increasingly large number of students enrolled in the College of Mechanics, all of whom take their principal advanced courses in this department.

Military Science and Tactics.—The War Department Bulletin of August 17, 1918, which includes the University in its list of distinguished colleges, marks the fourth consecutive time the University has held a place on this list.

Captain Lyman M. Welch, Retired, who was the Professor of Military Science and Tactics during the year 1917–18, was relieved August 31, 1918, and Colonel William Lassiter, Retired, was detailed in his stead.

During the fall semester of the current year a unit of the Students' Army Training Corps was established at the University and maintained from October until December, 1918. In addition to the Professor of Military Science and Tactics, forty-six line officers and ten medical officers were on duty with the unit of the Students' Army Training Corps. Fourteen hundred and fifty-seven students of the University were enrolled as members of the Students' Army Training Corps Unit.

The courses of instruction in the Students' Army Training Corps Unit were those prescribed by the War Department. Colonel Lassiter was relieved from duty as Professor of Military Science and Tactics by War Department orders dated January 24, 1919.

In January, 1919, under instructions from the President's office, the officers who had been on duty with the Students' Army Training Corps Unit, who were still at the University, enrolled the students in military courses and organized the cadets into a regiment of three battalions of

five companies each. On February 2, 1919, Colonel John T. Nance, Retired, reported for duty as Professor of Military Science and Tactics under the provisions of War Department orders of January 24, 1919. Under telegraphic authority from the Committee on Education and Special Training, an infantry unit of the senior division of the Reserve Officers' Training Corps was reëstablished February 2, 1919. The courses of instruction since that date have been those prescribed under the Reserve Officers' Training Corps regulations, which were the same as the courses conducted in this department during the year 1917-18.

All of the officers at the University on February 2, 1919, who had been on duty with the Students' Army Training Corps Unit were relieved from time to time between that date and the middle of April. Four officers have been detailed as Assistant Professors of Military Science and Tactics during the spring semester, and reported at the University for duty as follows: March 5, 1919, Captain Curtis D. O'Sullivan, Infantry; April 5, 1919, Major Norman E. Fiske, Field Artillery; April 7, 1919, Lieutenant Colonel Ode C. Nichols, Infantry; April 24, 1919, Major Lewis K. Underhill, Infantry. All these officers except Major Fiske are now present for duty. Under telegraphic instructions of May 24, 1919, from the War Department, Major Fiske left the University May 30, 1919, for temporary duty with the American Expeditionary Forces in France. These telegraphic instructions state that he will return to the United States on or before September 1, 1919.

Quartermaster Sergeant Christian Ploss, Retired, has been on duty as an assistant to the Professor of Military Science and Tactics since October, 1917. Three non-commissioned officers of infantry reported for duty as assistants to the Professor of Military Science and Tactics in April, 1919. The personnel of the department detailed for duty by the War Department is now, therefore, five officers and four non-commissioned officers.

The changes in personnel noted in the foregoing made necessary frequent changes of instructors, but all of the prescribed courses have been given during the semester.

Not all of the articles of ordnance equipment and of clothing for which requisitions were submitted in February and March, 1919, have been received. This has necessitated drilling without uniforms and without ordnance equipment other than rifles.

Only eleven third- and fourth-year students have been enrolled in the advanced course of the Reserve Officers' Training Corps during the current semester. A number of students who had had military training in the University and who had been to officers' training camps and commissioned in the Army during the war were attached to the Reserve Officers' Training Corps and gave very valuable assistance in the instruction and discipline of the regiment during the current semester.

Sixteen students who have completed the basic course have been selected for further training and have promised to continue with the work of the advanced course of the Reserve Officers' Training Corps during the remainder of their course in the University. This is a very small number of students electing to continue in the advanced course with a view to being commissioned in the Officers' Reserve Corps. It is not only necessary that a large proportion of the students completing the prescribed work go on with the advanced course and take the courses in camp training leading to a commission in the Reserve Corps if the unit is to serve its purpose, but it is highly desirable from the standpoint of efficiency of the cadet regiment that practically all of the officers of the regiment be seniors and all of the sergeants juniors. There should be a minimum of approximately sixty juniors and forty-five seniors for the unit to be properly supplied with officers and non-commissioned officers from the upperclassmen in the University.

The total number of students enrolled in the department during the current half-year is 1324, 1160 of whom were members of the Reserve Officers' Training Corps and 164 of whom were attached to the Reserve Officers' Training Corps. One hundred and forty-five of those attached were members of the United States Naval Reserve Force and not eligible for membership in the Reserve Officers' Training Corps. With the approval of the President, the military training of these students who are members of the United States Naval Reserve Force was deferred until August, 1919. The maximum strength of the regiment was 1217 on February 17, 1919; the minimum strength 971 on May 28, 1919.

Mining and Metallurgy.—The service flag of the College of Mining bears 162 stars, four denoting the supreme sacrifice. The national crisis disrupted routine work, and faculty, alumni, and students wholeheartedly accepted the call to service. Classes were disorganized and the constructive plan of the last three years interrupted, but in the coming year all indications point to a record enrollment of freshmen and the return of students full of confidence, earnestness of purpose and ambition. The outlook is most gratifying.

The loss of our benefactress, Mrs. Phoebe Apperson Hearst, is greatly felt; her sweet womanly qualities, unfailing interest and magnanimity encouraged and sustained this department for many years.

During the academic year 1918-19 changes and improvements have been made in the college laboratories and modern equipment installed. A reverberatory furnace has been added to the smelter room and switch board completed to supply power to an electric furnace. Several new oil flotation machines for experimental purposes have been purchased, alterations and additions made to the ore dressing laboratory so that the metallurgical equipment is assuming the form of a more modern,

efficient and acceptable unit. The petroleum laboratory has been greatly improved by the acquisition of apparatus and facilities for experimentation. Competent research and instruction is now possible. The division of petroleum engineering is attracting many more students than heretofore. The Lawson Adit has been driven further into the hills and is of increasing value as a laboratory in which to direct the early practical mining work of the students.

The United States Bureau of Mines rescue car visited Berkeley in May. All seniors were given instruction by federal officers in the use of oxygen breathing and first-aid apparatus, receiving certificates of competency for the work.

The war has emphasized, as perhaps nothing else would have done, the importance of natural mineral resources and the imperative necessity, in times of emergency, of exploiting them. Changing conditions compel scientific investigation of present practices and researches such as will reduce unit costs. The University laboratories must participate in this work and it is hoped that either state or private funds will be made available to collaborate more closely with the United States Bureau of Mines. Fellowships should be established so that advanced students may carry on the excellent work in the Bureau Experiment Station.

During the year the following investigative work has been done in the local station of the United States Bureau of Mines under the direction of Dr. L. H. Duschak: a study of the problems connected with the extraction of quicksilver from its ores; the prevention of mercury fume-losses and the condensation of furnace gases, roasting operations, methods of assaying, health and safety conditions pertaining to quicksilver. In coöperation with the War Minerals Investigation, a systematic study of the deposits of chrome and manganese and methods of treatment was made; the manufacture of carbon electrodes was undertaken; the concentration of sulphur by flotation; the volatility of lead, zinc, and silver chlorides, sponge iron production and other incidental problems were worked out.

The desirability of giving engineers a broader and more liberal education has been demonstrated and it is hoped that changes in the rigidly prescribed curriculum of the College of Mining will be effected in the near future.

L. C. Uren, Assistant Professor of Mining, by urgent request of the War Department, in August, 1918, was called into active service overseas as Captain in the Chemical Warfare Service. He returned in February, 1919.

Frank H. Probert, Dean of the College of Mining, was appointed in June, 1918, member of the War Minerals Investigation, and made a hasty survey of the mineral resources of the Maritime Provinces of

Canada and Newfoundland. Later as consulting engineer of the United States Bureau of Mines he studied the mineral situation in the Rocky Mountain States. In November he was appointed a member of the special committee to look into the administration of the War Minerals Act, and in January was nominated by Franklin K. Lane, Secretary of the Interior, as a member of the American Mining Mission sent to France at the invitation of the French High Commission, to appraise the damage done to the mines of Western Europe during the war, and advise on matters of reconstruction. Professor Probert returned to Berkeley early in May.

Music.—In rendering a report on the Department of Music for the year 1918–19, certain matters involving the relation of the University to the state should be discussed. The preparation of teachers of music for the public schools is of primary importance. Students, before being certificated by the state for such teaching in California, are required to do a certain minimum number of hours of “practice teaching” in the public schools. At present the students of the University seeking such certification for music teaching are not afforded the opportunity for this practice teaching in a degree commensurate with the requirements of the state. There are insufficient classes at the University High School to meet the needs of this work. Because of the influenza during the last year it has been impossible to make arrangements elsewhere. It is hoped that opportunities for university students to obtain the prescribed teaching experience will be afforded in future years.

A departmental deficiency in the subject of community music was remedied in a preliminary way by giving prospective teachers a knowledge of the history of the subject, together with practical instruction concerning organization. There should, however, be special and adequate courses in this subject. A community chorus was organized early in the fall by Arthur Farwell, Associate Professor of Music for the year 1918–19. This chorus could not be organized in and for the university alone, as, on principle, it must exist for the entire community. The chorus was twice stopped by the influenza, and, in the brief available intervals for its continuance during the first semester, was so dampened by the public’s avoidance of meetings, that little could be accomplished. Moreover, it became plain that if it was to reach the people in the widest way, the campus was not the most advantageous place for it. The chorus was reorganized as the Berkeley Municipal Community Chorus, with a committee of citizens, appointed by the Mayor, in charge. Influenza conditions and the processes of the new organization delayed an official start until March 18, when it was begun in the Berkeley High School Auditorium. The shortness of time remaining made impossible any extended growth of the movement or important demonstration before the end of the academic year, but the chorus continues as a civic institution.

Oriental Languages and Literature.—The Department met with some hindrance to its plans for the year, due to two occurrences; the organization of the Students' Army Training Corps, whose regulations kept some members of the Corps from entering the classes in Oriental languages, and the departure of Dr. E. T. Williams, Agassiz Professor of Oriental Languages and Literature, for Paris, whither he went at the request of the Honorable Robert Lansing, Secretary of State, to serve as a Technical Delegate to the Peace Conference. This occurrence interrupted the courses of lectures that had been announced for the year.

Professor Williams left early in December. The remainder of the lectures for the first half-year were read by Mrs. E. T. Williams, who also took over the language classes of Professor Williams for the remainder of the year. The classes under the instruction of Mr. Y. S. Kuno, Instructor in Japanese, and Mr. S. C. Kiang, Assistant in Chinese, were conducted as usual.

The number of students taking Japanese has considerably increased. As compared with the preceding year the increase was over 20 per cent.

Considerable difficulty has been experienced in obtaining a suitable text-book for those beginning the study of the Chinese language. The available books are not only very expensive, but ill-suited, because especially prepared for students in China who devote practically their whole time to the study of the language. Efforts are now being made in the Department to remedy this difficulty by preparing a text-book better adapted to the needs of a university student. At present these lessons are available only in blue prints, but it is hoped that means will be found in the near future for their publication in proper book form.

Palaeontology.—During the past year the classes in the department continued with numbers approximating those of previous years. The work of the graduate students was considerably diminished owing to the fact that nearly all of the men were absent on war service.

During this year special effort was made to see that organization of materials in the department reached a relatively high stage of efficiency in order to permit more ready application of scientific information for practical uses. The department has finished a complete index of all materials in the collection with cross references covering locations of types and figured specimens, and giving both geological and biological classification of the collections. This has made possible for the first time ready access to every group of fossil forms secured and labeled.

During the year important field work has been conducted by Chester Stock, Research Assistant in Palaeontology, B. L. Clark, Assistant Professor of Palaeontology, and E. L. Furlong, Assistant in Palaeontology, and the results of these studies have been included in several technical papers which have important scientific and practical value.

Philosophy.—At the opening of the year, instruction in the courses of philosophy proper was definitely transferred from the Philosophy Building to Wheeler Hall. This was made necessary by the increasing demands of the work in Psychology upon space in the Philosophy Building, and by the growth of the work in Philosophy, much of which had not, for several years, found accommodation in the Philosophy Building. It is unquestionably a distinct advantage both that the courses in Philosophy and the offices of instructors should be centered in Wheeler Hall, in close touch with kindred departments, and with convenient access to the Library.

The Mills Lectureships were filled during the year by Dr. John Dewey, Professor of Philosophy in Columbia University, during the fall term, and by Dr. W. E. Hocking, Professor of Philosophy in Harvard University, during the spring term. Two members of the department who had engaged in war service returned to the University in January, Dr. G. M. Stratton, Professor of Psychology, and Dr. C. I. Lewis, Assistant Professor of Philosophy.

The department is not unmindful of the necessity of devoting an increasing measure of its energies and of its courses to the fundamental problems of life and of society which the war has left behind. Many of the courses have been reorganized with this purpose in view, and particularly, two new year courses have been established in the Lower Division, one in the History of Ideas, and the other in the Problems of Philosophy. It is hoped that these courses will increasingly serve to awaken in students, at an early period of their college career, a critical appreciation of the development and the present status of the outstanding problems of civilization.

Physical Education for Men.—The policy adopted five years ago by the Department of Physical Education for Men, which has made the establishment of standards of physical efficiency the basis for procedure in physical education, is gaining recognition in all parts of the country. Standards are being compiled for the army and a sub-committee of the National Committee on Physical Education is making investigations looking to the establishment of national standards for the primary and secondary schools as well as for the colleges. The primary schools of California are experimenting on standards of physical efficiency and the department is preparing standards for experimental use in the state high schools.

During the first half-year covered by this report the department was engaged in the conduct of various types of war work which were briefly reported in the special "Department Report of War Work" compiled for the President of the University, and in the detailed weekly and monthly reports issued to the School of Military Aeronautics and the Students'

Army Training Corps Unit. The chief facts worth noting as a result of the department's war period functioning are its experiences with an ideal scheme for the organization for the development of intramural competition and its opportunity for carrying out a plan of systematic physical education through athletic sports in the School of Military Aeronautics.

The need of increased field areas and other facilities in intercollegiate developmental, recreative, and intramural athletics has been felt keenly in the past year.

The activity of the department in promoting athletics during the past year included the coaching and training of varsity teams in boxing, wrestling, fencing, gymnastics and soccer football, as well as weight teams in basket ball and the freshman teams in basket ball and baseball. There follow tables compiled by the department showing the work of the department and the athletic endeavors of the men of the University in the last year:

TABLE 1
REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA
FALL HALF-YEAR 1918—1919

Course No.	Activity	Non-Military Work	S.M.A.		S.A.T.C.		Naval unit	
			Class Work	Intra-mural Sports	Class Work	Intra-mural Sports	Class Work	Intra-mural Sports
1.	Gymnastics (military).....	....	436	....	1400	....	....	....
1.	Gymnastics (Swedish).....	....	....	....	....	....	118	....
2.	Corrective Gymnastics..	9	....	....	....	....	1	....
3.	Track.....	1	....	81	....	116	....	29
4.	Baseball.....	....	....	84	....	119	....	38
4.	Football.....	....	....	....	....	....	....	27
4.	Soccer.....	....	....	....	....	51	....	21
5.	Basketball.....	9	....	....	....	80	15	69
6.	Tennis.....	17	....	....	....	64	20	39
6.	Volleyball.....	....	....	....	....	44	....	....
7.	Boxing.....	35	....	132	....	53	49	24
8.	Wrestling.....	16	....	....	....	48	12	9
9.	Fencing.....	....	....	....	....	28	....	5
10.	Swimming.....	5	....	....	....	76	....	....
	Total.....	92	436	297	1400	679	215	261
		Class Work.....				2,143		
		Intramural.....				1,237		
		Men Training for Varsity Athletics Foot- ball.....				58		

TABLE 2

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA
MARCH 1, 1919

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN—

Course No.	Activity	For credit required	For credit elective	Total	Without credit elective
1.	Gymnastics.....	507	1	508	3
2.	Special Gymnastics.....	27	....	27	2
3.	Track.....	159	....	159	....
4.	Baseball.....	59	....	59	25
5.	Basketball.....	21	....	21	101
6.	Tennis.....	54	....	54	....
7.	Boxing.....	317	8	325	28
8.	Wrestling.....	83	....	83	12
9.	Fencing.....	3	....	3	....
10.	Swimming.....	58	1	59	4
11.	Rugby Football.....	....	....	....	....
12.	Soccer.....	4	....	4	10
13.	American Football.....	....	....	....	....
14.	Class Games (Faculty).....	....	....	....	9
15.	Handball.....	5	....	5	15
16.	Recreation.....	....	....	....	28
17.	Elementary Tumbling and Ap- paratus Work.....	5	....	5	....
18.	Crew.....	43	....	43	....
110B.	Practice Teaching.....	....	2	2	....
111B.	Advanced Gymnastics.....	....	3	3	5
112B.	(I) Advanced Boxing.....	....	4	4	....
112B.	(II) Advanced Wrestling.....	....	4	4	....
Total.....		1345	23	1368	242

PARTICIPATION IN INTRAMURAL SPORTS FROM JANUARY 20 TO MARCH 1, 1919

Inter-class Swimming.....	22 men
Novice Tennis Tournament.....	128 men
Total.....	150 men

MEN TRAINING FOR INTERCOLLEGIATE ACTIVITIES JAN. 20 TO MAR. 1, 1919

Track		Tennis		Rugby	
Varsity	50	Varsity	10	Varsity	43
Freshman	50	Freshman	10	Freshman	22
— 100		— 20		— 65	
Baseball		Boxing		Soccer	
Varsity	30	Varsity	16	Varsity	18
Freshman	61	Freshman	22	— 18	
— 91		— 38		— 18	
Basketball		Wrestling		Crew	
Varsity	15	Varsity	16	Varsity	30
Freshman	11	Freshman	20	Freshman	35
Weight Teams	10	— 36		— 65	
— 36		Swimming		Gymnastics	
		Varsity	13	Varsity	4
		Freshman	17	—	
		— 30		Total	
				503	

TABLE 3
REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA
APRIL 15, 1919

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN—

Course No.	Activity	For credit required	For credit elective	Total	Without credit elective
1.	Gymnastics.....	401	1	402	3
2.	Special Gymnastics.....	24	....	24	2
3.	Track.....	185	....	185	....
4.	Baseball.....	65	....	65	11
5.	Basketball.....	22	....	22	80
6.	Tennis.....	83	....	83	....
7.	Boxing.....	309	16	325	20
8.	Wrestling.....	96	10	106	30
9.	Fencing.....	5	....	5	....
10.	Swimming.....	48	....	48	4
11.	Rugby Football.....	....	....	....	....
12.	Soccer.....	....	....	....	....
13.	American Football.....	8	....	8	....
14.	Class Games (Faculty).....	....	....	....	8
15.	Handball.....	7	....	7	18
16.	Recreation.....	....	....	....	30
17.	Elementary Tumbling and Apparatus Work.....	6	....	6	....
18.	Crew.....	42	....	42	....
110B.	Practice Teaching.....	2	....	2	....
111B.	Advanced Gymnastics.....	....	3	3	....
112B.	(I) Advanced Boxing.....	....	3	3	....
112B.	(II) Advanced Wrestling.....	....	5	5	....
Total.....		1303	38	1341	211

PARTICIPATION IN INTRAMURAL SPORTS—MARCH 1 TO APRIL 15, 1919

Novice Track Meet	45	Novice Tennis Tournament	64
Freshman-Varsity Track Meet	58	Inter-class Boxing	23
Inter-class Track Meet	70	Inter-class Wrestling	18
	—173	Inter-class Gymnastics	7
Inter-frat Basketball	210		— 48
Inter-club Basketball	49		—
	—259	Total	544

MEN TRAINING FOR INTERCOLLEGIATE ACTIVITIES MAR. 1 TO APR. 15, 1919

Track		Boxing		American Football	35
Varsity	55	Varsity	8	(Spring Practice)	
Freshman	41	Freshman	8		
	— 96		— 16		
Baseball		Wrestling		Crew	
Varsity	27	Varsity	7	Varsity	18
Freshman	35	Freshman	8	Freshman	27
	— 62		— 15		— 45
Tennis		Swimming		Gymnastics	4
Varsity	10	Varsity	12		
Freshman	10	Freshman	16		
	— 20		— 28		
				Total	321

Physical Education for Women.—There is an ever increasing demand for well trained teachers of physical education. The Department of Physical Education for Women, therefore, is endeavoring to offer teacher training courses to meet this demand. There was a total enrollment for credit of 3367 during the past year, and a total enrollment in athletics and classes without credit of 1280.

The practice teaching of the department has been supervised by the department and conducted at the University High School. Every student receiving her teacher's certificate in Physical Education has two years of practice teaching, one year in her own university class and one year in the public schools. Seven of our graduate students receiving teacher's certificates in June, 1919, held responsible positions during the past year. This work they carried with their University work and all received remuneration for their additional labors. Five did substitute work in the Oakland and San Francisco public schools, one had charge of the work of the Girls' Club in San Francisco, and one in charge of the work of the Alameda School for Incurable Girls.

The principal new feature of the work of this department during the past year has been the training of Reconstruction Aides in response to a call from the medical authorities of the United States Army. Under the supervision of Dr. Elsie Blanchard the department offered courses in Anatomy, general, regional, and surgical; Physiology, with laboratory work; Kinesiology; Theory and Practice of Massage and Remedial Gymnastics; Hydrotherapy and Electrotherapy; Physiotherapy; First Aid; Hygiene and Sanitation; Military Subjects; accompanied by clinical practice which was arranged in coöperation with the University of California Hospital, the City and County Hospital of San Francisco, and the Letterman Hospital of the Presidio, San Francisco.

The University of California offered these courses to graduates of colleges and schools of physical education and other specially qualified persons between 23 and 40 years of age who were able to meet the physical requirements made by the Surgeon General.

Two new members were added to the department staff during the year: Elsie Blanchard, M.D., Assistant Professor of Physical Education, and Caroline Coleman, A.B., Instructor in Physical Education. Miss Maude Cleveland, Assistant Professor and Director of the Women's Gymnasium, on leave for the duration of the war, has served for the past two years as casualty officer under the American Red Cross in France. Miss Edna Lee Roof, instructor, was granted a year's leave of absence because of illness. Miss Frances Whittlesey resigned because of illness and Miss Mildred Lemon resigned because of death in her family.

This department coöperated with the University Infirmary, with the office of the Dean of Women and a special health committee headed by Dr. Lillian Moore of the Physiology Department in controlling the

influenza epidemic and in reducing the injurious effects of post-influenza conditions by conducting extensive examinations of convalescent patients and offering reconstructive physical training in graduated schedules in accordance with the requirements of individual cases. The provision of supervised rest-periods in three specially prepared and equipped rest-rooms formed a chief feature of this work. Although no sports were offered or practiced during the period of the influenza epidemic, the two gymnasiums, the corrective room and the out-door platform, were in constant use.

The Associated Women Students of the University have undertaken a campaign to raise funds to provide an adequate heater and filter for the Hearst swimming pool, which has been closed during the past two years because it has been considered dangerously cold a large portion of the college year.

Locker equipment for the gymnasium has been increased by the rehabilitation and reëquipment with locks of two hundred and fifty old lockers. A new laundry system which insures the laundering of gymnasium uniforms at least twice a month has been instituted. The new floor in the main gymnasium has been started and will soon be completed. Other needs of the department yet to be met are for additional office and conference room space and a new ground-floor corrective room.

The department supervised and coached the dancing in connection with the Partheneia during the spring semester, regular classes being conducted for this purpose by Miss Florence Eisenhardt, Instructor in Physical Education.

More complete organization of the required gymnasium work and the development of a system of check on the results obtained by the department have formed no inconsiderable portion of the accomplishment of the department in the last year.

In the first semester organized athletics and games were suspended because of the exigencies of the influenza epidemic. In the second semester the normal program was in force and was featured by an unusually successful field day in May.

Increased activity and coöperation on the part of the Sports and Pastimes Association was noted. A marked increase has been observed in the enrollment in elective courses.

Nine students received their teachers' certificates in Physical Education at the end of the spring semester. It is intended that this number shall be doubled next year and quadrupled in the one following.

Opportunity for specialized work is growing momentarily. In addition to the courses of training for Reconstruction Aides there are special research courses in this and in allied departments such as Anatomy, Education, Hygiene, Physiology, Psychology, Public Health, and Zoology; special training in corrective gymnastics; practice teaching at the Uni-

versity High School and substitute teaching in neighboring local schools; training in the theory and practice of athletic supervision and special classes in corrective exercises.

Physics.—For some time the increasing enrollment in this department, especially in lower division and graduate courses, has taxed the capacity of South Hall and of the teaching force to the utmost. During the past year the demands made upon the department by the Students' Army Training Corps Unit and the unprecedented size of the beginning class in January brought matters to a crisis. The temporary reduction in the size of upper division and graduate classes, which enabled almost the entire resources of the department to be devoted to the freshman classes, alone made it possible to carry on the work successfully. To meet the probable situation next year, temporary relief will be sought by abandoning the freshman laboratory work for engineering students, instruction being confined to experimental lectures and recitations. The addition of another instructor to the staff will make it possible for this work to be carried on entirely by instructors of experience, not partly by inexperienced assistants as was necessarily the case in the past, and this will offer some compensation for the loss of laboratory training.

A committee composed of representatives of the department and of other related departments was appointed to consider the needs of this department, and this committee in its report called attention to the urgent need for a new Physics building, and also recommended that the staff be strengthened to the end of promoting more effective graduate and research work.

The heaviest task of the department is its part of the preliminary training of students in the Engineering and Medical schools. This is important work, and can not be neglected, but it is no less important that the needs of upper division and graduate students be satisfied. One of the results of the war has been an increased recognition of the great economic and cultural value of research in physics and other sciences. There is a growing demand for trained physicists, both for teaching and for industrial research, and this department can not do its full part in this work without increased facilities. It is hoped, therefore, that means may soon be found for carrying out the recommendations of the committee referred to above.

L. T. Jones, Instructor in Physics, and W. P. Roop, Instructor in Physics, have continued in the Government service throughout the year; the former as Captain in the Aviation Service, the latter as Lieutenant in the Naval Reserve. The staff was strengthened by the addition of Dr. R. T. Birge, formerly assistant professor at Syracuse University, as Instructor in Physics.

Political Science.—The department's staff during the past year included the following: Professor Emeritus Bernard Moses; Dr. David P. Barrows, Professor of Political Science, on leave during the war when he served as Lieutenant-Colonel in the Intelligence Service in Siberia; Dr. Edward Elliott, Professor of International Law and Politics, acting head of the department; T. H. Reed, Associate Professor of Government; Dr. Ludwik Ehrlich, Lecturer in Political Science; Dr. J. R. Douglas, Instructor in Political Science, on leave of absence during the war and First Lieutenant on staff duty in Washington, D. C.; E. A. Martin, J. E. Johnston, H. McC. Woodward, Thomas J. Chamberlain and T. W. Dahlquist, Teaching Fellows in Political Science.

Mr. Chamberlain, who served in the war as a Captain in the Anti-Aircraft Service, was appointed at the beginning of the second half-year to assist in the course in governments and social institutions of the belligerent countries, peace terms and problems of reconstruction. Within a few weeks after his appointment he was invited by ex-President William Howard Taft to join the Speakers' Bureau of the League to Enforce Peace and he thereupon resigned his position with the department. Mr. Dahlquist, who had been a Lieutenant of Infantry in France, was appointed in his stead.

The courses offered by the department in connection with the war program of the University were Political Science M2, in which attendance was limited to student in the Students' Army Training Corps Unit and the Naval Unit; Political Science M5, which was a continuation of M2; Political Science 1A, 102, and 122, which were adapted to problems raised by the war.

The work of the first half-year was seriously interfered with by the influenza epidemic and the disturbed and changing conditions produced by the war and the Armistice. The second half-year witnessed a return to fairly normal pre-war conditions, and the enrollment in the department was the largest in its history.

Public Speaking.—The work of the department was conducted, during the first term, in conformity with the curriculum of the Students' Army Training Corps Unit. In both the first and second semesters the staff trained Four-Minute Speakers who served in the Liberty Loan, the Victory Loan, and Food Conservation campaigns. At the end of the second term a general meeting of all students enrolled in the department, in all about 650, was held, at which were presented examples of the different types of work done by the students—speeches, readings and a one-act play.

Romanic Languages.—The department suffered an irreparable loss in the death of Ramón Jaén, Associate Professor of Spanish, who came to the University in 1917 from the United States Military Academy at West

Point. Professor Jaén's unfailing courtesy and kindness had endeared him to his colleagues and students. In California he found much that reminded him of his native land, and his brief sojourn here stimulated his ambition to make known to his students and auditors the progressive movements of modern Spain.

During the year the department made seven contributions to the Semicentennial Publications in the form of four single volumes and three articles representing studies in the Spanish language and literature.

Semitic Languages.—In the first half-year there were but two registrations in the Semitic Department. In the spring half-year, however, the enrollment returned to normal, although the total number of students attending lecture courses was reduced because of the absence of Dr. Martin A. Meyer, Lecturer in Semitic Literature and History, in France. During the year the department's "Semitic Series" was increased by another number of the "Annals of ibn Taghrî Birdî."

Slavic Languages.—During the year instruction was given in the Russian, Polish, Bohemian, and Serbo-Croatian languages, and lecture courses were given on Russian novelists of the nineteenth century, recent Russian literature, the political development of modern Russia, and Slavic literature.

Since 1914-15 there has been a steady increase in the number of students taking courses in the department. In 1918-19 the registration was 187 (62 in language courses); in 1917-18 the corresponding figures were 144 (51 in language courses), and in 1914-15 they were 50 (15 in language courses). Two master's degrees were given in 1918-19.

A. S. Kaun, Assistant in Russian, has done excellent service to the University by his work as lecturer in the University Extension Division.

Zoology.—The number of students during the past year was naturally diminished on account of the war. The total enrollment was 1106, including 157 in the Summer Session, as compared with 1374 of the previous year. To a certain extent also the enrollment, especially in the lower division, was affected by the abolition of prescribed science.

During the absence of Dr. A. L. Barrows, Instructor in Zoology, who was engaged in military service in France, Dr. C. V. Taylor acted as Instructor in Protozoology. Dr. C. A. Kofoed, Professor of Zoology, who entered military service in the early part of the preceding year, has been continuing his work in parasitology. More recently he was transferred to a hospital for returning soldiers in New York City, where he has been carrying on investigation on protozoan diseases.

The department has issued several publications during the year. Dr. W. W. Cort, Assistant Professor of Zoology, has published several

papers on trematode parasites and has others in process of publication. Dr. J. A. Long, Assistant Professor of Embryology, has made important observations in connection with his studies of the oestrus cycle in the rat. Dr. J. F. Daniel, Associate Professor of Zoology, has completed the manuscript of a book on the "Elasmobranch Fishes," which has been accepted for publication. Dr. S. J. Holmes, Professor of Zoology, has published papers on problems of racial biology in man and a textbook for high schools on the "Elements of Animal Biology." Professor Kofoed and Dr. Olive E. Swezy have written papers on the parasites of termites and have in course of publication a large monograph on the dinoflagellates. Dr. Taylor has completed an important paper on "Microdissection Studies in Euplotes," in which he adduces experimental evidence for the nervous function of the so-called neuromotor apparatus of the protozoa. Several other important contributions have been issued by graduate students and others associated in different ways with the department.

The department has coöperated with the State Council of Defense in several ways. Professor Kofoed, and later Professor Holmes, were on the Committee on Zoological Research of that body, and the department has been concerned in the production of two publications relative to the increase of the food supply. In coöperation with the State Board of Health the campaign to eradicate hookworm from the state has been actively carried on, and studies have been made on the occurrence and life history of parasites introduced from the Orient.

The department regrets the loss of three members of its staff: Professor W. W. Cort, who has accepted a position in the Johns Hopkins School of Hygiene and Public Health, Dr. A. L. Barrows, who has been appointed secretary of the National Research Council at Washington, D. C., and Dr. C. V. Taylor, who has accepted a Johnston scholarship at the Johns Hopkins University.

ALUMNI SECRETARY

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit the report of the Secretary of the California Alumni Association for the year ending June 30, 1919.

The year 1918-19 was unique for the Alumni Association. Marked beyond all other years by the great increase in the number of those who were permanently taken from our membership rolls by war and influenza, the year yet brought a realization of three long-dreamed-of plans. In spite of the fluctuating conditions of war, the alumni managed to organize and maintain its Bureau of Occupations, initiate the Alumni Club movement among California towns where groups of former Californians are located, and direct a part of the campaign for the Student Union, first originated over twenty years ago by this Association.

During the year, the Association has coöperated with the University. Both the Summer Sessions of 1918 and 1919 were aided by the alumni. The University Extension movement is being pushed by the Association especially in those towns where district councils are formed. When Amendment No. 8 came up for passage it was the alumni who rallied to the cause of a greater and freer university and only recently, when the University wished to immortalize Henry Morse Stephens, the Alumni Association was chosen as the instrument for directing a state-wide campaign for a memorial.

The Association work for the past year divides itself readily into four classes: the customary work, which includes the periodical entertainments, the *Fortnightly*, and the routine office work; the war work; the occasional work, which includes campaigns for

various purposes; and the new work, which includes the Bureau of Occupations and the District Councils.

Entertainments.—The annual football dinners were a real jubilee over the renewal of hostilities with Stanford and the cessation of hostilities with Germany. In San Francisco Ezra Decoto, '00, presided over a dinner of 150 alumni and in Berkeley Alice Porterfield, '08, gathered more than 100 alumnae in Senior Women's Hall.

Charter Day was observed at Victory dinners, in honor of the part played in the war by our Californians, in the following cities: Los Angeles, New York City, Portland, Oregon, Redding, Sacramento, Santa Barbara, Santa Rosa, Stockton, Washington, D. C., Fresno, Hollister, Bakersfield, Crescent City, Oakland, and Peking, China.

The Commencement Luncheon was held as usual in Faculty Glade. It was marked as the last luncheon attended by President Benjamin Ide Wheeler in his official capacity; by the presentation of an address by the alumni to the retiring executive, and by the election of officers, by which the president of the Association became a member of the Board of Regents.

The Fortnightly.—The publication of the *Fortnightly* has been maintained without increase of dues or subscriptions in spite of doubled costs. It has gained in subscribers and advertisers. In October, 1918, the first edition of the University Honor Roll was published by the *Fortnightly* and a final edition in June, 1919. In May, 1919, a special Summer Session edition of the magazine was issued.

Office Activities.—During this year of activity, unusual in its abundance and quality, with a staff running short-handed because of the influenza and war, the Alumni Office has successfully carried on the following lines of work: The addresses of 15,000 migratory alumni have been maintained. Headquarters were changed from 114 to 201 California Hall. Several thousand football programmes were mailed as Christmas greetings to California boys with the American Expeditionary Forces. It has conducted vigorous membership campaigns. It has responded cheerfully to calls for help from the *Daily Californian*, the *Blue*

and Gold, University offices, classes, directories and newspapers. It has carried on a heavy correspondence. It has supplied the alumni with tickets for the Big Game and the many rallies held during the year.

War-Work.—The war-work of the Alumni Association can be divided into three parts: the War Records, the Military Bureau, and the contribution made to the American University Union. The compiling of the Honor Roll is not yet complete, for the story of our 4200 men is a long one. At the request of the President's Office, faculty, and members of the Naval Unit and of the Students' Army Training Corps have been included. The signing of the armistice brought to a successful close the Military Bureau and its twenty-five branches. The alumni contributed more than \$1000 to the American University Union, which was the home of California boys overseas.

Occasional Work.—When Constitutional Amendment No. 8 was put before the State of California to be voted upon, the alumni rallied in committees all over the state, with the result that the amendment was passed with a large majority vote.

When Henry Morse Stephens died, the University in its desire to immortalize the great teacher, called upon the Alumni Association to organize a world-wide campaign. The Central Council responded with alacrity and Chaffee Hall, '10, was appointed to direct the campaign.

New Work.—In January, 1919, the Central Council of the Alumni Association decided to turn the machinery of the Military Bureau into a Bureau of Occupations and immediately to assist in the placing of returning soldiers, sailors, or women war-workers. Query cards were mailed to a total of 2733 persons and a thousand business firms were notified. Alumni volunteered their services to interview many local firms, and newspapers all over California ran our announcements. In five months of life the Bureau has received 723 pieces of mail and has sent out 827; 433 persons have called and 53 positions have been filled.

The senior women requested the Alumni Association to assist them in a vocational conference. The Women's Committee of the Bureau of Occupations, of which Mrs. Warren Olney, '95, is

chairman, secured most of the speakers. The conference rooms were overcrowded and the committee was more than ever impressed by the fact that women are deeply interested in professions other than teaching. This committee has invited alumnae engaged in such professions to act in an advisory capacity to the younger women who desire to break away from traditional occupations.

Alumni Clubs.—The alumni clubs have awakened to new life. At the time of war so many members of the clubs went into the service that most of the units ceased activities. The present general plan for the clubs is to assist the University in its Extension work; to aid the Bureau of Occupations; and to keep alive the friendships formed in college. These clubs have given invaluable help in the Stephens Memorial Campaign.

The comparatively brief life of most of the clubs prevents more than a short report:

Fresno.—On March 22 the Fresno Club held a Charter Day dinner with De Witt H. Gray as toastmaster.

Hollister.—At the time of the Charter Day dinners, the alumni in Hollister held a dinner and formed a club in San Benito County.

Los Angeles.—In January, 1919, Mildred Valerga, '18, serving as secretary to Dean Monroe E. Deutsch, '02, of the 1919 Southern California Summer Session, established an alumni office in Los Angeles which it is hoped will become a permanent clearing house for the southern alumni.

After the establishment of the Bureau of Occupations in Berkeley, Clinton E. Miller, then president of the Central Council, appointed a committee to investigate the situation in Los Angeles.

In March a large and successful banquet was held when the new officers were elected.

New York City.—The New York Council suffered from the war, but they did work in regard to the housing and entertainment of the University ambulance units. When Section 586, the first unit organized by the Military Bureau, returned from France a committee of the alumni welcomed the men from the deck of a boat provided by the Mayor's Welcome Committee. A large and successful alumni dinner was held at the City Club when officers were elected.

Portland, Oregon.—This club was able to continue during the war and has a thriving organization. At their last annual meeting Charles Henry Cheney, '05, made an address and officers for the year were elected. In March of 1919 President Creed made a visit in Portland and was entertained with a banquet.

Redding.—The Redding Club was formally organized on March 4 and on March 22 celebrated the birthday of the University of California.

Sacramento.—In March, 1919, with a large banquet in honor of the California legislators, the club started a new era of activity.

San Diego.—The San Diego District Council has reorganized.

San Jose.—The San Jose Club was reorganized on May 23.

Santa Barbara.—The Santa Barbara Club was formed in March.

Sonoma County.—Santa Rosa took an active part in the passage of Amendment No. 8 with committees in Santa Rosa and also in Healdsburg. In March, 1919, a dinner and dance were given.

Stockton.—In Stockton the California Club also suffered from the war. However, the secretary, Gerald Beatty Wallace, succeeded in keeping the work of the Association before the alumni. In March, 1919, a large number of alumni assembled for the Charter Day celebration.

Washington, D. C.—This club has always been very active in this city, owing very largely to the constant loyalty of Morris Bien, '79, Stephen Mather, '87, and of later years, Horace Albright, '12. Throughout the war Albright kept an index of Californians not only in Washington but also in the training camps so that it was always easy for travelers and residents to find each other. In November alumni of Stanford and California in Washington celebrated the Big Game conjointly with a very large attendance. In March, 1919, over 80 alumni attended the Charter Day celebration when new officers were elected.

Honolulu.—No reports have been received from the Islands since the war, although the club is still existent, having given a banquet recently in honor of Stephen Mather, '87, who was visiting in Hawaii.

Manila, P. I.—A district council has been formed in the Philippines. Notices have been placed at the docks to greet incoming Californians and all graduates, and urging former students and members of the faculty of the University of California to notify the club of their arrival in the Islands.

China.—Charter Day in China was enthusiastically celebrated by Californians in Peking, who were entertained on March 22 by Julean Arnold, '02.

Respectfully submitted,

HOMER HAVERMALE,

Secretary.

APPOINTMENT SECRETARY

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit herewith my report covering the period from July 1, 1918, to May 31, 1919.

The work of the Appointment Secretary's office, like that of the Employment Bureau maintained by the Alumni Association, has been affected by war conditions. Not only was there a steady drafting of teachers into the Service, creating an extraordinary demand for teachers and at the same time reducing the supply, but calls from the government for investigators, censors, and secret service agents who had special qualifications such as knowledge of several languages, had to be met.

This office worked in closest coöperation with the Military Intelligence Bureau and the Employment Bureau of the Alumni Association, and in addition, furnished direct to the Surgeon General's Office, to the War Camp Community Service, to the Red Cross, to the National League for Women's Service, to the Federal Board for Vocational Education, and other national organizations, teachers to serve as reconstruction aides, translators, canteen workers, stenographers, statisticians, censors, and through the Young Men's Christian Association and the Young Women's Christian Association, scores of teachers and hostesses to the military camps. The Appointment Secretary served as one of three Pacific Coast representatives of the Intercollegiate Committee on Women's War Service Abroad.

In addition to these war emergency calls, much time was consumed in securing teachers of agriculture, the mechanic arts, and home economics for vocational work under the new Federal Smith-Hughes and Smith-Lever Acts.

The demand for substitutes created by the influenza epidemic could not be met with the limited number of candidates listed by this office.

It was necessary to seek for teachers wherever they could be found without regard to their previous residence at the University. We registered in all some 2310 candidates in the eleven months covered by this report. During the same period we had 2875 separate calls. Over 3000 sets of recommendations of candidates were sent out, and over 15,000 letters. There were 8519 visitors to the office and over one thousand long distance telephone messages and telegrams.

Fortunately the office was relieved of the handicap of cramped quarters and given space for its work.

Even yet conditions are far from normal. So many men and women are still in war emergency service, or in the larger service of the reconstruction period which has just begun. The shortage of teachers has created a crisis which is receiving the attention of our national leaders. Plans are afoot for including the recommendation of teachers in the new professional section of the United States Employment Service. A national service in connection with the United States Bureau of Education is also contemplated. The question to be solved is whether the eight hundred thousand teachers in the United States shall be handled by a separate service or in connection with the recommendation of other professional workers. In this connection the Appointment Secretary has recently accepted the chairmanship of the National Committee on Vocational Opportunities for College Trained Women of the Association of Collegiate Alumnae. This committee will coöperate with the leaders in Washington who are attempting to solve this problem.

Respectfully submitted,

MAY L. CHENEY,

Appointment Secretary.

CALIFORNIA SCHOOL OF FINE ARTS

SAN FRANCISCO, July 1, 1919.

To the President of the University,

SIR: I have the honor to present the following report of the California School of Fine Arts (San Francisco Institute of Art), for the academic year 1918-1919.

The difficult conditions under which the country suffered during the fall of 1918 were reflected in a diminished attendance during our first term. With the new year, however, there was a rapid return to a normal state in the school, the number of students enrolled being as large as at any previous time.

Working in complete harmony, the members of the faculty and Board of Directors have carefully considered every phase of the school activities in an earnest endeavor to eliminate entirely all waste of time and effort on the part of students, due to any lack of systematic conformity in the various courses, and so to coördinate the work of the entire school as to lead to a more unified result. The success of these efforts has been gratifying and distinctly evident in improved average standard of work.

The night school has been steadily growing in interest, filling as it does a most important demand for a chance to study art by many who are bound to commercial pursuits. The scope of the night school is now such that the courses offered are equal to those of the day school.

There is a wide field of advancement open to young men in the line of sculpture, especially as applied to architecture. We are building up a strong course in sculpture in the night school to supply this need.

A new feature, which we believe will be of lasting benefit to the school, is a plan for an interchange of exhibitions of students' work in drawing, sculpture and design with prominent eastern art schools, arrangements for which have been made. This will tend to disseminate broad ideas and improved methods of work as well as have an influence in bringing the institutions closer together, in their common effort in the cause of art.

The usual scholarships were awarded at the close of the spring term, including three given to high school students in annual competition. The Summer Session, as usual, has a large enrollment from Pacific Coast states.

Respectfully submitted,

LEE F. RANDOLPH,

Director.

COLLEGE OF DENTISTRY

SAN FRANCISCO, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit a report for the College of Dentistry for the year 1918-19.

The college experienced the usual difficulties arising out of the war. It was necessary to revise the curriculum and schedule three times during the first quarter to comply with the plan of the War Department to standardize dental instruction in this country. This, with the epidemic of influenza, demoralized the work of the first quarter but a normal readjustment proceeded rapidly with the opening of the term in January.

One hundred seven students were enrolled in the Students' Army Training Corps and thirty-two in the Naval Unit. The latter rendered valuable service to the city of San Francisco by serving as hospital apprentices at the San Francisco Hospital for five weeks. The only death occurring in the student body, resulted from this service. John A. Russell, a member of the senior class, contracted the disease while on duty, and insistently remained at his post during the critical preliminary stages, finally succumbing after three days' illness on November 8, 1918.

Faculty changes necessitated by the international crisis included the resignation of Dr. C. L. Hoag, Instructor in Physiology, and Dr. A. L. Morin, Assistant in Prosthetic Dentistry. The latter, a very promising young teacher, contracted the influenza and died at Camp Fremont just one month after entering military service.

On the recommendation of the faculty and with your approval a course of instruction for dental hygienists was inaugurated at

the beginning of the regular term. Three women enrolled for this course, two of whom satisfactorily completed the work and were certificated June 4, 1919. A bill introduced into the Legislature to legalize this service passed both houses unanimously but unfortunately failed to receive the approval of the Governor. On June 28, 1919, the California State Dental Association unanimously endorsed the course of study as given by the college and recommended that it be continued. This movement is recognized nationally as one of the most decisive forward steps in preventive medicine yet promulgated.

On January 17 and 18, 1919, the college entertained Dr. Georges Villian, Director, Ecole Dentaire, University of Paris, whose dental work on the western war front has commanded the attention of the medical and dental world. Dr. Villian toured America at the request of the American Institute of Dental Teachers, and while in San Francisco lectured to five hundred members of the dental and medical profession.

While in Washington the writer made tentative arrangements with the Federal Board for Vocational Education to provide instruction in prosthetic (mechanical) dentistry for disabled soldiers. The constantly increasing demand for dental service requires either a largely increased supply of dentists, or a division of labor whereby persons trained in limited fields for a shorter period of time may be employed to do certain kinds of work under the supervision of licensed dentists. This offers a very favorable opportunity for the crippled soldier. At the request of the Federal Board, copy for a monograph on this subject has been submitted, and our school has been mentioned as one which may be asked to provide this instruction. The plan has received the approval of the University Council and the Academic Senate.

The question of a five year course in dentistry, including one year of academic work as a prerequisite is now being considered by the universities in the East which give dental instruction. The University of New York has adopted a five-year course to begin in 1921.

During the past year the dental school has received a great many requests for assistance in helping to spread educational propaganda throughout the state concerning dentistry and its importance in public health. These requests have been for exhibits, lectures, films, lantern slides, and personal coöperation. Whenever it was possible the faculty has unhesitatingly placed the facilities of the school at the disposal of the people of the state in an effort to be of service to them. While our primary purpose may be the educating of dental students, it is the desire of the faculty to serve the state as a secondary obligation in the broader activities in dentistry.

Respectfully submitted,

GUY S. MILLBERRY,

Dean.

EXAMINER OF SCHOOLS

BERKELEY, July 1, 1919.

To the President of the University,

SIR: As Examiner of Schools I have the honor to submit herewith my report for the year 1918-19.

Following the procedure of recent years, the operations of the Department during the past year may be grouped under the following general headings: First, personal field work with the schools; second, general supervision of the official work of the University visitors; third, as Chairman of the Committee on Schools, general responsibility for the policy and activities of this Committee; fourth, correspondence and conferences with teachers and school officials; fifth, statistical study of the scholarship records made in the University by freshmen; sixth, miscellaneous.

In the case of the activities to be listed under most of these headings there have been few changes from the former year. Consequently, for the most part, a very brief discussion will suffice.

First: The personal visiting by the Examiner occupied as usual the second half year, extending well into the latter part of June. Owing to war and epidemic conditions mainly, the schools did not close until unusually late. This visiting, as was to some extent the case last year, was less satisfactory than it usually has been. Programmes were frequently found disarranged; the regular work was in some cases quite set aside for unusual and irregular activities; holidays or large vacations were declared suddenly and without notice; and, finally, the actual class results were often far below the usual standards. This was due, in the main, to the loss of time occasioned by the epidemic of influenza. Schools lost from two to as many as sixteen weeks during the year.

Not a few schools which the Examiner had planned to visit in person were of necessity omitted. This was true, especially, of a number of schools in distant parts of the state. Special effort will be made to see all these schools next year.

Second: The visitation of the secondary schools and junior colleges through the University visitors was undertaken this year as in recent years.

However, the late closing of the University term made it very difficult, in a number of cases even impossible, to do this work thoroughly or as well as usual. The visitors could not get release from regular University duties to reach the schools in many cases until the closing date was too near or even passed. As a result more schools failed of visitation than in the preceding year, and quite too many were visited after the regular class work was over. The schools justly object to this late visiting. It looks to them as though the visiting of the schools was not taken seriously by the University; that it was a task to be performed but in a perfunctory way. Needless to say this should not be the spirit in which the work is undertaken and carried out.

Last year a shortage of funds for the work made it necessary to assess the private institutions a flat rate of \$10 per school to cover the expense of the visiting. With the necessary curtailment of the work alluded to above, this charge upon the private schools has not been necessary this year. As in recent years the whole cost of the visiting of both public and private schools has been borne this year by the University.

The schools which it was necessary to omit have good cause for complaint. They made application in due form and so far as they know they have complied with the requirements for accrediting. They feel it a hardship upon their graduates who would attend the University that the schools have not been visited, and that as a consequence their graduates must take entrance examinations. Wisely, it seems to the writer, the University has modified the plan for admission for such applicants, so that they have been asked to submit to an examination in a certain number of selected subjects instead of having to take examination in the whole fifteen units required for admission to the University. The results of this plan will be watched care-

fully and checked up in comparison with the results in the case of those who entered by the normal plan of the principal's recommendation.

Third: The Committee on Schools has had a less busy year than usual. Conditions in the schools and in the University were so unusual that it seemed best to allow the schools the utmost freedom under the hard conditions that prevailed, and not to hamper them by laying down rules and regulations which might be, in many cases, impossible to follow.

However, with the restoration of normal conditions and especially with the new plan for admission of freshmen to the University, the Committee will have much to do in advising the schools and assisting them to adjust themselves to their new relations with the University.

Fourth: The correspondence and allied work of the Examiner has been adequately cared for this year, in so far as prolonged absences of the Examiner from the University permitted. The Examiner stands greatly in need of a private office in the interest of the Schools Committee's work.

Fifth: The statistical study of the scholarship records of the freshmen, which has been for more than a dozen years an especial feature of the Examiner's work, has been discontinued so far as publicity has been concerned, for the past two years. Owing to the unusual conditions through which schools and University have been passing, it was deemed unwise to hold either schools or students to the former rigid standards of comparison. However, after the return to normal conditions, and especially in consequence of the adoption of the new plan for admission to the University these studies will be taken up again and given even a greater weight in determining the rating of schools.

Sixth: Under the miscellaneous activities of the Examiner may be mentioned special conferences with school boards, attendance upon meetings, addresses at commencements and other occasions. The year just passed has been unusually full in this respect.

Respectfully submitted,

W. S. THOMAS,

Examiner of Schools.

UNIVERSITY EXAMINER

BERKELEY, July 1, 1919.

To the President of the University,

SIR: During the past year the University Examiner has been concerned primarily with the problems involved in the admission and classification of students. Due to diminished attendance in junior colleges, incident to the war, junior college matters have not been pushed as energetically as previously.

ADMISSION OF STUDENTS

The new plan of admission resulting from the action of the Academic Senate in the spring of 1919, differs from the old plan in two particulars: first, it permits the acceptance by the University of applicants who have satisfied the requirements for graduation of an accredited California high school, these requirements including subjects specified by the schools themselves and by the State Board of Education, rather than by the University; secondly, the emphasis in the principal's recommendation is placed upon the fitness of the applicant to do work in the University. The school is thus required to place its seal of approval upon the applicant. The University leaves the school free in this matter to determine its own standards of recommendation.

It should be mentioned that the removal of restrictions as to the subjects which may be presented for admission to the University has probably resulted in the admission of fifty or seventy-five students who would have been refused under the old plan.

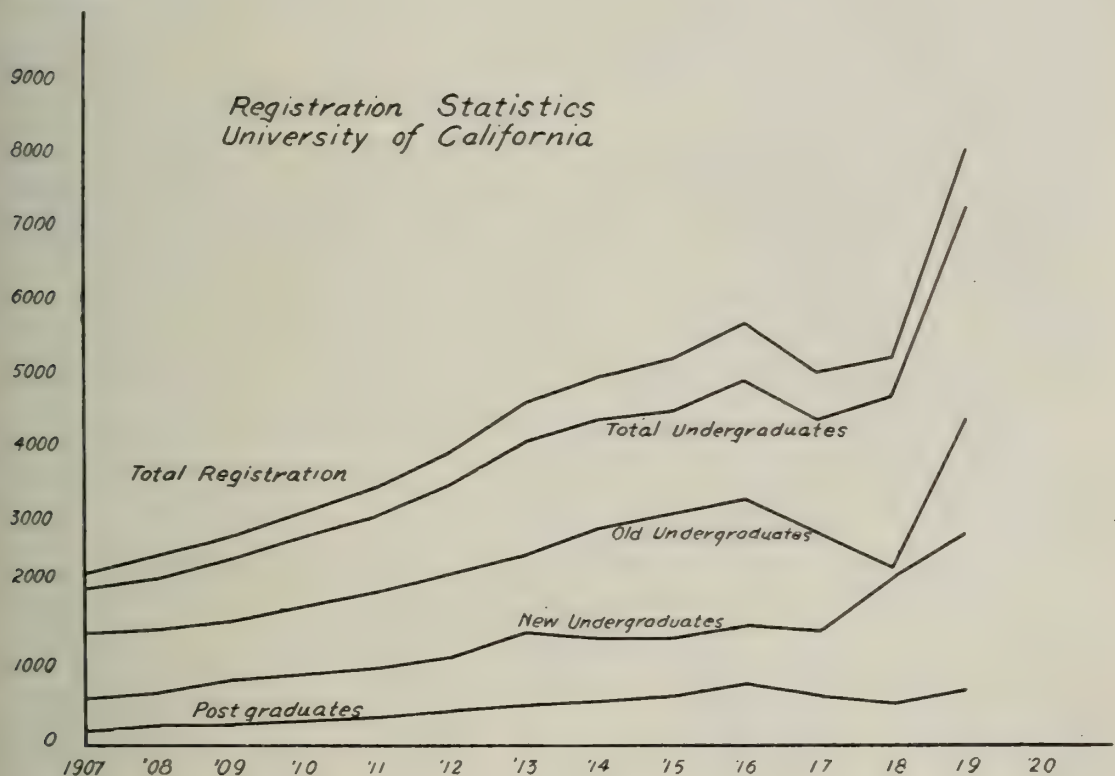
Experience with the new plan of admissions suggests several desirable modifications for use in the future, one of which would be a uniform basis of recommendation to be adopted by the high schools of the State. This would serve as a protection to the

principal of a small school under local influence, and would, in many cases, aid the principal in justifying both to the University and to the students the recommendations that he issues.

Included in the plan for a standard basis of recommendation, there might be intelligence tests, and tests in English Composition similar to our Subject A. These problems are to be made the subject of discussion by the Joint Committee of University and High School representatives authorized in April, 1919.

ANALYSIS OF UNIVERSITY ENROLLMENTS

Much interest has been manifested in the large enrollment experienced in August, 1919, and its relation to the future of the University. On this account a brief analysis of the figures for the University of California with some references to those of other institutions, especially of State Universities, may be of value.



The accompanying cut of curves shows the attendance at the close of the fifth day of registration each year from 1907 to 1919 inclusive. Five graphs are drawn—the lowest shows the number of graduate students, the next the number of new

undergraduates, the third the number of old graduates, the fourth, the total number of undergraduates, and the fifth, the total registration.

Two facts are worthy of special note; first, the increase in new undergraduates in the fall of 1919 over the fall of 1918 is not quite as great an increase as that of 1918 over 1917, but it is greater in absolute numbers than any other annual increase in the number of new undergraduates. The phenomenal increase in new undergraduates in 1918 over 1917 was due in large part to the formation of the Students' Army Training Corps Unit at Berkeley. Secondly, if an extension in the general direction of the total registration curve from 1907 to 1916 be made without a knowledge of the figures for 1917-1918-1919, the result obtained in 1919 will approximately accord with the actual figures, that is to say, the University has an enrollment in 1919 which it would probably have had at that time had the war not occurred. During the period of the war, it will be noted that the total registration showed considerable loss.

In one respect, the large attendance of this fall has upset preliminary estimates, that is, in the number of students who returned to the University after absence during a part or all of the war period. Of those who had left, approximately 300 were expected to return this fall; actually, 1150 returned—hence the University finds its upper division and graduate classes well filled, although not as crowded as the lower division classes are.

The following tabulation recently compiled by the Recorder shows the percentage of increase in a number of State Universities:

UNIVERSITY.	INITIAL REGISTRATION IN FALL OF			PER CENT OF INCREASE OVER	
	1916	1918	1919	1918	1916
California	5756	5252	8027	53.0%	39.4%
Washington	3215	3300	4710	42.7%	46.5%
Minnesota	4676	†.....	6470	†.....	38.3%
*Michigan	5555	†.....	7500	†.....	35.0%
Illinois	5214	5076	7102	39.9%	36.2%
Wisconsin	4886	4760	6832	43.5%	39.8%
Texas	2386	2112	3550	68.0%	48.7%

* Returns still incomplete. † No data.

It is interesting to note that the percentage of increase is nearly the same in most of these institutions. In several it has been necessary to permit students to take elective instead of required studies because of crowded classes.

From the above analysis it would appear that the State Universities are everywhere confronted with groups of students larger than ever who desire higher instruction. The conditions under which this instruction will be given in the future, the correlation of the number of students, of the number of members of the Faculties, the teaching load of Faculty members, the necessary income for support of the institutions and the mode of obtaining it; this is a problem which demands the best study which university administrators can give.

The problem is not one concerned primarily with the reduction of enrollment to the present facilities of the institutions in order that the quality of work may not be impaired, but rather that of obtaining a proper balance between the facilities of the institutions and the number of students who are qualified to pursue advanced instruction. When it is realized that a phenomenal increase in attendance has occurred in the high schools throughout the country, and especially in California, during the past four or five years, it will be understood that the problem is not a transient one and that the University may confidently expect, under existing conditions to be called upon to provide instruction for 18,000 students in 1929. In all probability, the number will considerably exceed the estimate given.

Effects of the War on Admissions.—In order to estimate the effect of the war on the admission of students, a tabulation has been made to determine the length of the period between high school graduation and entrance to the University, both for men and for women students. The results for August, 1912, a normal pre-war year, and August, 1919, follow:

From the above it appears that the percentage of students entering the University within one year of high school graduation was 81 in 1912, and in 1919 was 74.7. In 1912 the percentage was approximately the same for men and for women. In 1919, 70.7 per cent of the men students entered within one year of high school graduation, and 79.5 per cent of the women students so entered. It would thus appear that the war contributed largely in delaying the admission to the University of men graduating from the high schools. Doubtless the effect on the percentage of men would be still greater were it not for the existence in the fall of 1918 of the Students' Army Training Corps, which caused the University to experience at that time the largest freshman class in its history; whereas, its enrollment otherwise was considerably diminished.

CLASSIFICATION OF STUDENTS

War Specials.—The Credentials Committee began shortly after the signing of the Armistice to devise a method of appraisal of credentials presented by students who had served in the military and naval forces of the United States. College credit was not allowed for military service as such, except to the extent necessary to satisfy the lower division prescription of Military Science and Tactics at the University. Additional credit was allowed to those whose experience had included training similar to that given in the University. Thus, for the courses in the Officers' Training Schools of all branches of the Army, elective college credit was allowed at a rate varying from one-half to one semester hour per week of instruction. Students who had received commissions after attending such schools were granted a total of twelve semester hours. The maximum credit for military service, including the type of training above indicated, was set at sixteen semester hours. An exception to this maximum was made in the case of students who had attended special courses provided for them in foreign universities. Credit was allowed for such special courses at their full value regardless of the total number of units received by the applicant for mili-

tary service. The reason for this is evident, since the work taken was wholly of academic character.

Admission of Students from Without the State.—Of the 3300 new undergraduates admitted to the University of California this fall, about 800 come to the University from without the State. This is a slightly larger percentage than previously, although the percentage has remained almost constant during the last ten years. Since a large percentage of these students shortly become citizens of the State, and probably valuable ones, the requirement of tuition fees from them as a possible source of revenue, offers some difficulties of administration and is opened to some objections from the point of view of general policy.

Respectfully submitted,

B. M. WOODS,
University Examiner.

UNIVERSITY EXTENSION DIVISION

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit herewith the report of the Extension Division for the year 1918-19.

The present organization was formed in 1912, though some extension activities, chiefly lectures, were previously conducted under the direction of Professor Henry Morse Stephens.

SCOPE AND AIM

The Extension Division serves persons who seek training and information, but who can not attend the University. It is a means of extending to the people of California, so far as practicable, the usefulness of the University. During the past year it has emphasized forms of training that might assist in winning the war. It has been carried on, for the most part, along the following lines:

1. Class Instruction.
2. Correspondence Instruction.
3. Instruction by Lectures.
4. Visual Instruction.

Other lines, such as Public Discussion, Package Libraries, Municipal Reference and General Information, have received less attention.

People in the United States are more and more making use of the University Extension educational facilities. Universities indeed are not able to supply the entire demand. The result is that many private companies throughout the country are now

carrying on business of large proportions in the field of extension service. In most cases the universities can do better work than private companies and it is important that their facilities should be as fully organized as possible to meet the needs of non-resident students.

FEDERAL COÖPERATION

The Division of Educational Extension at Washington, D.C., has been of great service during the year in developing and furthering the work of the Extension Division of the University of California. In the first place it has had governmental authority to distribute large quantities of educational materials accumulated during the war. The Extension Division of the University of California has been made the sole distributing agency in this state for certain classes of these materials. Herein are included stereopticon slides, moving picture films and outlines of certain technical courses which in modified form may be used in our Department of Instruction by Correspondence. In the next place the Washington office has acted as a clearing house for extension divisions throughout the United States. It has gathered from all quarters ideas, suggestions and plans, which have then been freely circulated.

ADMINISTRATION

The general direction of the work is under the control of the University Extension Administrative Board, appointed by the President and responsible to him. The members are Professors Bolton (Chairman), Chinard, Cross, Daggett, Hart, Haskell, Merriam, Putnam, Stebbins, and Richardson. The Board has held forty-one meetings during the year.

SOURCES OF INCOME

The state appropriation for the year was \$35,000. The balance of the Division's income was derived from fees.

FEES

Fees are charged because state aid for the purpose is not large enough to bear the entire cost of the work. General University funds may not be drawn upon by the Division. What the Legislature appropriates for Extension Service is used (1) to maintain the Division as an organizing and administrative body (for example: postage, stationery, clerk hire, stenographers' salaries, mimeographing, preparation of bibliographies and syllabi, office supplies and equipment, transportation, rent of offices and classrooms, telephone and telegraph tolls, printing, salaries of officers) and (2) to pay part of the compensation of lecturers, class instructors and writers of correspondence courses, the balance being made up from fees paid by those who receive the benefit of the work. By this plan the Division is able to serve large numbers of people.

For Extension classes the usual fee is \$5 for fifteen one-hour lessons; for correspondence courses, \$5 for fifteen lessons. A single University Extension lecture may as a rule be secured by any community in the state for \$25. Educational stereopticon slides and moving picture films are rented for \$1 per program in addition to expressage. Certain specified sets of slides are circulated without any charge except expressage.

INSTRUCTORS' COMPENSATION

A class instructor receives 80 per cent of the fees paid by the students in his class, but not to exceed \$10 per hour.

The sum of \$150, as a rule, is paid to the writer of a correspondence course of fifteen lessons.

A member of the Faculty receives 1 per cent of his annual salary for giving a single Extension lecture, 1½ per cent for two lectures in a series, and 2 per cent for three lectures in a series.

CREDIT

Credit gained through Extension courses may be counted toward a bachelor's degree. In theory three-fourths of the required number of credit hours may be so applied. No student, however, has ever been graduated at the University whose work has been done even to the extent of one-fourth in the Extension Division. In order to secure University credit, Extension students must select courses that have been approved for the purpose. Furthermore, in connection with each course a student must pass such examinations as may be prescribed by the instructor. Matriculation credit is given only to students who pass the regular matriculation examinations at the University. Credit toward a master's degree or a teacher's certificate may be obtained by an Extension student only on approval of the Graduate Council. Such approval must be secured before the work is undertaken.

NEW POLICY

A great effort has been put forth during the year to make the University Extension service adequately represent the University. Every branch of its work has been connected with the corresponding branch in the University. This may be illustrated in the Department of Class Instruction. Whenever a demand is made for a particular class, the instructor and the outline of his course must be approved by the University Extension Administrative Board, the department of the University concerned and the President of the University. If the course carries credit toward a degree, it must also be approved by the Committee on Courses. By this thorough system of checking it is hoped that whatever is offered through the Extension Division may be truly representative of what the University stands for.

REORGANIZATION

An effort is being made to reorganize the Division in such manner as to bring in more experts for supervision and organization. This change is illustrated in the Assistant Director in

Charge of Offices, Mr. B. B. Rakestraw. He is in charge of not only the main office at Berkeley, but also the offices in San Francisco and Los Angeles. His work will furthermore cover other offices that may be established. It is also illustrated in the newly appointed Editor, Mr. Aubrey Drury, who is in charge of publications issued by the Extension Division. These include announcements in book form, newspaper articles, magazine articles, circulars, notices and placards. It is further illustrated in the appointment of Mr. Julian R. Waybur, as Organizer and Supervisor of Extension Music Courses. His work has already resulted in a marked improvement in this department of Extension service. The University Extension Administrative Board is planning to secure an Assistant Director in Charge of Instruction. His duties will be to select class instructors and writers of correspondence courses, to inform them concerning the character of the work required, to visit Extension classes and help in every way possible to bring Extension teaching up to the highest possible level.

BRANCH OFFICES

Branch officers are being maintained at the following places:

San Francisco, Mrs. L. K. Gow, in charge.

Los Angeles, Miss Nadine Crump, in charge.

Stockton, Dr. Gerald B. Wallace, in charge.

Plans are under way to open offices in Fresno and San Diego.

DEPARTMENT OF CLASS INSTRUCTION

(Central and Northern parts of the State)

A reorganization of the Department of Class Instruction during the year has brought about two important changes. First, its teaching staff was made to contain a higher percentage of the University Faculty and University trained men and women than ever before. Secondly, the teaching of each subject was brought into close relations with the corresponding department

of the University. This resulted in better supervision and an elevation of standards. The service rendered by this branch of University Extension may be summarized as follows:

Subjects taught—	Students
Business Subjects	1688
English	481
Eugenics	25
Home Economics	65
Hygiene	74
Interior Decoration	126
Journalism	169
Languages	569
Music	36
Mathematics	465
Navigation Courses	459
Public Speaking	440
Technical	916
Hospital Courses	328
Miscellaneous	86
 Total enrollment	 5827
 Number of classes	 314
Number of instructors	77
Cities in which classes were held	8

DEPARTMENT OF LECTURES

(Central and Northern parts of the State)

During the year, 265 Extension lectures, 7 literary readings and 58 musical recitals were given, making a total of 330 engagements. Of this number 158 were delivered by members of the University Faculty, 51 by members of the Extension Division Staff and 121 by lecturers, readers or musicians employed expressly for the purpose. The aggregate attendance at these Extension gatherings was 75,570 persons, the average number being 229.

Certain features of the work call for special mention. From December 17 to 20, 1918, the University was host to a mission

of scholars sent by the French Government to the United States for the purpose of cultivating closer relations between the institutions of higher education in the two countries. The mission consisted of Colonel Reinach, Dr. Burnet, Lieutenant de Ricci, Captain Cazamian and M. Kochlin. The Extension Division had charge of the lectures given by these gentlemen in California. During their visit at the University they gave nineteen addresses in the San Francisco Bay region. Their work was received with the highest appreciation.

Dr. David P. Barrows, formerly Dean of the Faculties of the University, returned in April from Siberia, where he had served as Lieutenant-Colonel in the United States Army. At the suggestion of the President of the University the Extension Division worked out a plan whereby Colonel Barrows should lecture on the problems of the Far East. Accordingly he spent three weeks lecturing to audiences distributed all the way from Los Angeles to Tehama County. His work was greatly appreciated by the people of California.

Plans have been perfected during the year offering a course of lectures each summer in the Yosemite Valley. These lectures are to be called the "Le Conte Memorial Lectures." They are in honor of Joseph Le Conte, the celebrated naturalist, who was a distinguished member of our faculty for some thirty years. The lecturers for this year are Professor Willis L. Jepson of the Department of Botany, Professor A. L. Kroeber of the Department of Anthropology, Dr. Francois E. Matthes of the United State Geological Survey and Dr. William Frederic Bade of the Pacific School of Religion, the literary executor of John Muir. These lectures will be published annually in the form of a volume by the National Parks Division of the Department of the Interior.

A change in policy of the department should be mentioned. It formerly emphasized lectures given by professional lecturers. This year it has laid stress on lectures given by members of the University Faculty. This has made the work more truly representative of the University.

At the suggestion of the Acting Director, the President of the University appointed an Advisory Committee on University

Extension lectures. This committee consists of Professor W. A. Morris, chairman, Professors Foote, Kemp, Wells, and Adams. The Director of University Extension and the Assistant Director in charge of Organization are *ex-officio* members of the committee. Between October 25, 1918, and May 28, 1919, the committee held thirteen meetings, at which both policies and particular engagements were handled. The work of this committee has been of great value.

DEPARTMENT OF CLASS INSTRUCTION AND LECTURES

(Southern part of the State)

The growing activity of this department is indicated by the fact that in 1917-18, 1103 persons were enrolled in the classes, while in 1918-19 the number was 2161. In fact, it is becoming clear that there exists here, as nowhere else in the state, a demand for courses of an intensive type. A great many persons desire to do work that may be applied toward a university degree, but are prevented by distance and expense from taking up their residence at the seat of the University, at least for an extended period of time.

These educational needs, so far as they concern the University, are being met partly by the Extension Division and partly by the annual Summer Session held in Los Angeles. They will be further met by the Branch of the University recently established in Los Angeles. In order to fulfill its obligations toward the southern part of the state, the Extension Division needs the coöperation of all departments of the University with which it is connected.

The following tables summarize the work of the department.

Number of students in classes	2161
Number of classes	115
Number of courses carrying credit	65
Number of students in credit courses	842
Number of instructors	38
Number of cities served	6

Subjects—	Enrollments
French	562
Banking	437
English	295
Commerce (Domestic)	132
Foreign Trade	103
Education	122
History	90
Spanish	68
“Inspiration of Greece”; “Art and Citizen- ship” (by Professor Holborn).....	308
Miscellaneous	158
Number of lecturers and musicians	47
Number of lectures and musicals	207
Number of cities served	27

A special feature of the year's work was a series of lectures delivered before the Los Angeles Chamber of Commerce on the subject of Foreign Trade by Professors B. Moses, C. C. Plehn, and L. J. Ayer. During the second term Professor I. B. Stoughton Holborn gave 116 lectures in six different centers, extending from Santa Barbara to San Diego. Some of them were connected with his course on “Art and Citizenship,” some with his course on “The Inspiration of Greece,” and some dealt with other aspects of art and literature. His work was highly appreciated.

DEPARTMENT OF CORRESPONDENCE INSTRUCTION

This department at present offers 199 correspondence courses which are grouped under eleven main divisions:

Drawing	Mathematics
Education and Philosophy	Science
English	Business Subjects
History and Economics	Technical Subjects
Languages	Home Economics
Music	

During the year twenty-one new courses have been added and three old ones completely revised. The work of instruction has been carried on by thirty-five instructors, of whom but one

had worked on a full time basis. In all, 11,848 lessons have been read and criticised. During the year 2835 enrollments have been received. This number represents a gain of 379 over the preceding year. The occupations of correspondence students are shown in the following table:

Clerical	528
Teachers	274
Technical	246
Housewives	198
Industrial	187
Professional	102
Enlisted men	91
Agriculture	67
Students	65
Commissioned men	22
Chemists	17
Nurses	14

DEPARTMENT OF VISUAL INSTRUCTION

This department circulates educational films and stereopticon slides among schools and organizations in California. During the year it made 837 shipments of the former and 221 shipments of the latter. The total attendance of persons at the engagements before which these materials were shown was 112,208. The department had on hand during the year 140 films and 81 sets of slides.

MUNICIPAL REFERENCE

Inquiries received along these lines are referred for answer to the appropriate departments of the University. A number of the Extension courses are planned with reference to the needs of municipal officers.

PACKAGE LIBRARIES

The Extension Division has been equipped by the Federal Government with a number of package libraries. They deal with matters of fundamental importance for the state and the United States. They include such basal subjects as Americanization,

the Relation of Labor to Capital, the Railroad Problem, and History of the War. These are circulated free of charge among citizens of the state.

FINANCIAL STATEMENT

			Inc. over 1917-18
The State appropriation 1918-19 was.....	\$35,000		None
Add to that, the surplus July 1, 1918.....	6,625		29%
And the fees for instruction.....	72,230		19%
Making total receipts.....		\$113,855	16%
The total expenditures have been.....		117,974	29%
Leaving a deficit July 1, 1919 of.....		4,119	

DISTRIBUTION BY BUREAUS

OF

INCOME, EXPENDITURES (WITH PRO RATA SHARE OF ADMINISTRATION) AND FREE SERVICE

Bureau	Income	% Inc. for Dec. over 1917-18	Expenditures	% Inc. over 1917- 18	Free Service	% Inc. or Dec. over 1917-18
Class.....	\$31,299	11 inc.	\$46,158	10	\$14,859	100 inc.
Correspondence.....	11,829	21 inc.	19,307	60	7,478	239 inc.
Lecture.....	5,935	16 dec.	20,582	77	14,647	257 inc.
Los Angeles.....	21,155	164 inc.	19,933	45	1,122***	121 dec.
Public Discussion.	**63	*	151	*	214	*
Visual.....	2,075	22 inc.	11,843	41	9,768	45 inc.
Total.....	\$72,230	16 inc.	\$117,974	28	\$45,744	52 inc.

*Discontinued October.

**Refunds greater than Income.

***Surplus.

Respectfully submitted,

L. J. RICHARDSON,

Acting Director.

GRADUATE DIVISION

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit my report on the Graduate Division for the academic year 1918-19.

Graduate Council.—At the beginning of the year an “Administrative Committee” was appointed and has discharged all work of minor detail, reporting to the Council at its stated meetings. It has been the policy of the Graduate Council to postpone important pending legislation until the restoration of normal conditions.

A special committee has been appointed to revise the curricula in Public Health and to report on appropriate degrees. The recommendation of the School of Education to change the professional degree of Graduate in Education to that of “Doctor of Education (Ed.D.)” has been approved and referred to the Academic Senate.

Attendance.—The total registration of graduate students for the last four successive years was 1014, 1092, 931, and 603, including 23, 16, 4 and 6, admitted to study in absence. The decrease in registration which these figures indicate was due to the war. Of the 991, 1076, 927, and 597 resident students, 52, 55, 75, and 57 either failed to file study-cards or withdrew. The remaining 939, 1021, 852, and 540 were distributed as follows:

PROFESSIONAL SCHOOLS AND COLLEGES—	1915-16	1916-17	1917-18	1918-19
Agriculture (all subdivisions).....	75	63	34	12
Architecture.....	19	18	7	4
Chemistry (including students in other colleges with major subject chemistry).....	44	43	32	18
Commerce (including students in other colleges with major subject economics).....	54	65	41	22

	1915-16	1916-17	1917-18	1918-19
Education (not including students in the School of Education with a first major in other subjects).....	53	93	97	68
Engineering.....	15	13	5	13
Jurisprudence.....	95	88	47	53
Medicine (students who take the first or second year at Berkeley in graduate standing).....	28	37	53	18
Naval Preparation.....	....	....	6	1
Total.....	383	420	322	219
Percentage.....	40.8	41.1	37.6	38.7

MODERN AND ANCIENT LANGUAGES AND LITERATURES—

English.....	100	101	95	48
German.....	39	46	34	15
Greek.....	4	3	3	1
Latin.....	29	30	25	16
Oriental Languages.....	2	2	3	1
Romanic Languages.....	46	45	58	31
Semitic Languages.....	5	1	1	1
Slavic Languages.....	3	4	3	2
Celtic.....	....	....	....	1
Total.....	228	232	222	116
Percentage.....	24.3	22.6	25.9	21.5

NATURAL AND ALLIED SCIENCES—

Anatomy.....	2	4	3	1
Anthropology.....	6	5	6	2
Astronomy.....	8	7	3	3
Biochemistry (Physiological Chemistry 1915-16 and included under Physiology 1914-15).....	5	7	3	2
Botany.....	12	18	20	10
Geography.....	4	4	1	3
Geology.....	8	10	8	4
Hygiene.....	7	6	7	2
Mathematics.....	23	40	29	15
Mineralogy.....	1	2	1	0
Palaeontology.....	3	3	3	0
Pathology and Bacteriology.....	8	3	10	8
Physics.....	25	24	11	4
Physiology.....	11	8	7	5
Public Health.....	3	7	6	2
Zoology.....	29	21	29	20
Total.....	155	169	147	81
Percentage.....	16.5	16.5	17.17	15.

OTHER SUBJECTS—	1915-16	1916-17	1917-18	1918-19
Household Art and Science.....	33	30	25	20
Drawing and Art.....	10	13	13	11
History.....	69	81	76	55
Music.....	5	3	3	2
Philosophy.....	27	31	26	12
Psychology.....	7	6	4	9
Physical Education.....	9	9	6	12
Political Science.....	13	16	10	8
Public Speaking.....	...	11	2	3
Library Science.....	...	...	...	2
Total.....	173	200	165	134
Percentage.....	18.4	19.5	19.27	24.8

The percentage of women has steadily increased since 1914-15, as shown by the following figures:

	1914-15	1915-16	1916-17	1917-18	1918-19
Percentage.....	44.8	47.1	51.3	58.1	60.2

In addition to the registered students, a number of accepted candidates for higher degrees continued their studies under the direction of the University during temporary absence. No figures are given for them this year because many of these probably merely maintained a formal connection with the University while engaged in war work, either in the Army or Navy or otherwise.

Institutions Represented.—The classification of graduate students according to the institutions from which they had received degrees was as follows:

	1917-18			1918-19		
	No. of institutions	No. of students	Percent-age of students	No. of institutions	No. of students	Percent-age of students
University of California.....	1	526	61.4	1	343	63.3
Other California institutions...	9	87	10.1	7	42	7.8
Other institutions west of the Rocky Mountains.....	14	44	5.0	13	35	6.5
Middle Western institutions....	49	121	14.1	30	61	11.3
Eastern and Southeastern institutions.....	37	63	7.3	27	45	8.5
Foreign institutions.....	18	21	2.4	9	14	2.5

The total number of institutions represented in these figures for the four successive years was 207, 175, 128, and 87. The great falling off in the number of institutions since the first year of the war shows the effect of the war on the migration of graduate students.

Candidates for Higher Degrees and Degrees Conferred.—The number of accepted candidates for higher degrees, the number of degrees conferred, and the number of recommendations for the high school teacher's certificate issued by the University have been as follows:

Degrees	1916-17		1917-18		1918-19	
	Candi- dates	Degrees conferred	Candi- dates	Degrees conferred	Candi- dates	Degrees conferred
M.S. and M.A.....	297	131	259	95	256	71
Gr.Arch.....	4	1	3	0	3	0
Gr.Educ.....	2	1	7	1	9	1
Gr.P.H.....	1	1	1	1	0	0
J.D.....	39	30	15	5	19	10
C.E.....	1	0	0	0	2	0
Mch.Eng.....	....	....	1	1	0	0
Min.Eng.....	....	....	1	1	0	0
E.E.....	1	1	1	0	0	0
Ph.D.....	99	33	84	18	95	21
Total.....	444	198	372	122	384	103
High School Teacher's Recommendations..	333	290	275	241	263	208
Grand Total.....	777	488	647	363	647	311

Here again the effect of the war is shown in the greatly reduced number of degrees conferred in 1918-19.

The number of candidates who either withdrew or were disqualified has been as follows:

	1915-16	1916-17	1917-18	1918-19
M.S. and M.A.....	22	24	25	23
J.D.....	1	5	5	4
Ph.D.....	3	13	12	7
H.S.T.R.....	17	1	12	14

Up to the present time the University has conferred a total of 220 degrees of Doctor of Philosophy. Of these 21 were con-

ferred during the past academic year, as compared with 18 during the preceding year. The following table gives a comprehensive view of the past and present activities of departments in regard to graduate and research work leading to this degree:

	Total number Ph.D.'s conferred	Ph.D.'s conferred 1915-16	Candidates Ph.D. 1916-17	Ph.D.'s conferred 1916-17	Candidates Ph.D. 1917-18	Ph.D.'s conferred 1917-18	Candidates Ph.D. 1918-19	Ph.D.'s conferred 1918-19
Agriculture.....	9	3	6	3	3	0	4	1
Anthropology.....	2	0	0	0	0	0	0	0
Archaeology.....	1	0	1	1	0	0	0	0
Astronomy.....	22	1	8	3	5	0	6	1
Biochemistry.....	7	1	3	1	3	1	4	2
Botany.....	13	2	1	1	1	1	1	0
Chemistry.....	26	5	5	4	3	3	7	3
Dentistry.....	0	0	0	0	1	0	1	0
Economics.....	3	1	6	0	6	0	8	0
Education.....	3	0	10	1	6	0	6	0
Electrical Engineering.	0	0	0	0	1	0	1	0
English.....	5	0	2	0	3	0	5	1
Geology.....	12	0	3	2	2	2	3	0
German.....	4	0	4	0	5	0	5	1
Hebrew.....	1	0	0	0	0	0	0	0
History.....	21	2	9	5	4	2	4	2
Hygiene.....	0	0	0	0	0	0	0	0
Jurisprudence.....	0	0	1	0	1	0	1	0
Latin.....	4	0	2	0	0	0	0	0
Linguistics.....	1	0	0	0	0	0	0	0
Mathematics.....	15	2	1	1	3	3	2	1
Medicine.....	3	0	0	0	3	0	8	3
Oriental Languages.....	0	0	2	0	1	0	1	0
Palaeontology.....	8	1	2	2	0	0	0	0
Pathology.....	1	0	1	0	1	0	1	1
Philosophy.....	6	0	2	2	1	0	3	1
Physics.....	12	1	6	2	10	2	7	1
Physiology.....	10	0	3	0	3	1	2	0
Political Science.....	5	0	7	2	4	0	4	0
Psychology.....	0	0	2	0	1	0	0	0
Romanic Languages.....	3	2	3	0	1	0	2	1
Zoology.....	23	1	9	3	12	3	9	2
Total.....	220	22	99	33	84	18	95	21

Graduate work in the Summer Session.—The relation of the Summer Session to the Graduate Division is indicated by the following table:

Year	Master's degrees conferred	Enrolled in Summer Session	Per- centage
1912—13.....	89	15	17
1913—14.....	119	19	16
1914—15.....	119	18	15
1915—16.....	149	27	17
1916—17.....	131	33	25
1917—18.....	95	28	29
1918—19.....	71	20	28

Research Record.—In the course of the past year the work of the Research Board has had the following objects: (1) a study of the progress of research in the University, (2) the assistance of departments and individuals so far as may be possible to secure support for fundamental investigations for which provision is not to be secured otherwise, (3) to advance coöperation and coördination of research work among departments and individuals and (4) to promote coöperation between the research workers of the University and those of other organizations engaged upon similar or related problems.

During the year the Board has met frequently and has now fixed upon the plan of meeting at least once in two weeks, with special meetings when necessary.

The Committee has attempted to fit its work to plans of the existing departments of the University and has frequently met with representatives or groups of representatives from these departments for the purpose of bringing about the closest correlation of investigations under way. The Committee has hoped that through the securing of a comprehensive view of all work in progress the University might be made a more efficient instrument for the handling of some of the larger and more fundamental problems for consideration of which this institution is especially adapted.

For the support of research work which might not otherwise be made possible to members of the University the Committee

has had \$4000 available by appropriation from the Regents in the past year. From this sum twenty-one grants, ranging from \$12.50 to \$900, have been made by the Committee for investigators representing ten departments. The grants have in the main represented contributions for assistance and apparatus. In two cases the sums appropriated have been for the purpose of paying travel expenses on journeys of members of the University attending important scientific meetings to present or discuss significant research problems.

The interest in research and the energy with which it has been advanced in many directions show unusual possibilities at our present stage of development. There is reason to believe that if the University is able to take advantage of its present opportunity its place as one of the leading constructive agents in the community and in the country may in the coming years be more important than that occupied during the critical period through which we have just passed.

Respectfully submitted,

WILLIAM CAREY JONES,

Dean of the Graduate Division.

HASTINGS COLLEGE OF THE LAW

SAN FRANCISCO, July 1, 1919.

To the President of the University,

SIR: I have the honor to present the following report of the Hastings College of the Law for the year 1918-19.

Since I assumed the duties of Dean at the close of the academic year, it is possible for me to report the work of the College only as it was given me in a summary by my predecessor, Dr. Edward R. Taylor.

Dr. Taylor's summary is as follows:

The matriculation was small, undoubtedly because of the conditions attendant upon the war. However, applications now coming in are patent of greatly increased enrollment for next year. There were 36 students in all, 13 in the senior class, 7 in the middle class, 5 in the junior class, and 11 special students. Of the senior, 12 were recommended for the degree of Bachelor of Laws, which were awarded by the University on June 4. Of the middle class, 6 were advanced to senior standing, and of the junior class, 4 were advanced to the middle class. The curtailment of the work of the College, necessitated by the late opening and enforced closing for four weeks in October and November on account of the influenza epidemic, was offset by the late Commencement. I am gratified to report that the planned schedule was thoroughly covered.

Respectfully submitted,

MAURICE E. HARRISON,

Dean.

HOOPER FOUNDATION

SAN FRANCISCO, July 1, 1919.

To the President of the University,

SIR: I have the honor to present the following report of the George Williams Hooper Foundation for Medical Research for the year 1918-19.

During the past year the laboratory routine was seriously disturbed by the influenza epidemic which placed a heavy burden on all medical schools and hospitals. This laboratory took part in the intensive study of this disease and was fortunate in being able to coöperate with Dr. D. W. McCoy and other able workers in the United States Public Health Service. In spite of all this work and careful study of this influenza epidemic in all parts of the world, it is generally admitted that the causative agent or virus is as yet unknown. Even the method of transmission is not established to the complete satisfaction of all investigators. Dr. K. F. Meyer, Associate Professor of Tropical Medicine, and his collaborators made a careful study of the bacteria which can be cultivated by the use of various media from the nasal, mouth and bronchial secretions in patients sick with influenza. Also a large amount (50,000 doses) of polyvalent influenza vaccine was manufactured in this laboratory and distributed free of charge to be used under careful control by various physicians and hospitals in this city and state. We have to report negative results following the use of this vaccine and other similar vaccines. There is no definite evidence that this vaccine conveys any protection to a susceptible person.

During the first wave of the epidemic many of the laboratory force were sick with influenza but the second wave was even more

serious. Two of the senior staff members were dangerously ill with pneumonia following influenza and their work as a result was interrupted for many weeks. One very able worker (Miss Marjorie G. Foster) died of influenza while on a visit to the East to attend scientific meetings and present the results of her interesting investigations. Her death was a severe blow to this department and her place will be hard to fill. Her friends hope that a fund will be accumulated to establish a fellowship in her name to carry on the work in which she was so greatly interested.

RESEARCH WORK

The work of the laboratory staff appears in various scientific publications, but in addition is gathered into the *Collected Reprints*, which volumes are distributed to various libraries, laboratories and individuals for convenient reference. During this year volume III of the *Collected Reprints* appeared, and this collection of reprints illustrates the various problems which occupy the staff workers. Some of these problems may be reviewed with great brevity.

Anemia studies and an investigation of the blood regeneration which follows simple hemorrhage have been continued by Mrs. F. S. Robscheit, Fellow in Research Medicine, and Dr. George H. Whipple, Director of the George Williams Hooper Foundation for Medical Research. Many food factors can influence this blood regeneration and the foods which cause the most rapid and satisfactory blood regeneration are being intensively studied to ascertain if possible the factors which are responsible for this favorable reaction. The accumulation of this accurate data is a slow process, but will be of value to physicians as an aid in the proper treatment of disease. Further, it is to be expected that this information will give us a more complete understanding of the processes which go on inside the body—exchange between the food and body tissues, which we often term “metabolism.”

Body pigment studies form a part of the preceding investigation and include a study of bile pigments by means of bile fistulas in animals. By such means the bile may be collected out-

side the body and analyzed by various means. Dogs with such fistulas live in health and comfort for months or years. It is obvious that the red pigment of the blood (hemoglobin) is related to the pigment of the bile and to other body pigments. This relationship, which is sufficiently complex in health, may become very involved in diseased conditions. That much study is needed for a proper comprehension of this story of pigment development, usefulness and ultimate disposal goes without saying.

Blood volume studies are necessary for a proper evaluation of the blood pigment. This work has occupied much time on the part of Dr. C. W. Hooper, Mrs. F. S. Robscheit, Mr. H. P. Smith, Mr. Arthur E. Belt, and Dr. George H. Whipple. Many established methods have been used and new ones developed to estimate the volume of blood which is circulating in the heart, blood vessels and entire body. There are serious difficulties in many of these methods but much valuable information has been gained. Through the friendly coöperation of Dr. Herbert M. Evans, Professor of Anatomy, and Miss Ava B. Dawson (Department of Anatomy) we have been able to test out a large number of dyes which can be injected into the blood stream and by proper analysis give accurate determinations of blood volume. The injection of other materials into the blood for the sake of blood volume analysis has been fruitful. Some of this work has a bearing on the question of surgical shock which was of such immediate importance during the war period.

Blood proteins have been studied by a variety of experimental procedures as well as in human disease. Mr. H. P. Smith, Mr. Arthur E. Belt, Mr. Daniel P. Foster, and Dr. George H. Whipple have followed the fluctuations of the blood plasma proteins. It has been demonstrated that a proper proportion of these fluid protein substances in the blood is necessary for the life of certain organ cells of the body. We may say that these blood proteins are "stabilizers" and tend to check any unusual fluctuations in the cell processes. Removal of much of this material results in cell and organ death, but these blood proteins are not apparently concerned in the nutrition of the body cells.

Bile acids in the bile may be studied by the same means

described above for the collection of bile outside of the body. Very little accurate information on this subject is available. Therefore the accurate and painstaking study of Miss Foster has great scientific value. The part played by these substances in the body nutrition is little understood and calls for a great deal of careful work. It is a rich field which will repay careful work. Some further investigations are being carried forward by Mr. F. S. Smyth and Dr. George H. Whipple.

Gastro-intestinal tract. Dr. W. C. Alvarez, Instructor in Research Medicine, has continued his studies on the gradient of metabolism in the intestinal wall. Particular attention has been paid to the influence of this gradient on the conduction of stimuli up and down the bowel. These studies are throwing light on the every day problems of gastro-intestinal medicine and surgery.

Studies of the bacteria of contagious abortion and of undulant fever (Dr. K. F. Meyer and Dr. E. C. Fleischner). The infection due to the abortion bacillus is prevalent in practically all dairy herds in this state and a study of this disease is highly desirable because of its great economic importance. The bacillus which causes undulant or Malta fever in human beings is present in Texas and in many European countries, but not known to be present in this state. These two organisms are very closely related, so much so that one may suspect a common parent organism. The relationship may be likened to that which is well known to exist between the bacillus of human tuberculosis and the bacillus of bovine or cattle tuberculosis. Both these organisms (bovine and human tuberculosis) can infect human beings but have distinctive family characteristics which make possible a differentiation.

Typhoid carriers in animals and human beings are being studied by Dr. K. F. Meyer, Miss Nelsine M. Neilson, Dr. Frank Hinman, Miss Maybelle L. Feusier, and Miss Jane Halbert. This investigation includes a study of patients and laboratory animals which are eliminating virulent typhoid bacilli in the bile, feces and urine. The causative factors, duration of disease, spontaneous healing and therapeutic treatment are all being studied. It is believed by many experts in preventive medicine that the

complete control of typhoid fever will depend in the future upon proper control and final successful treatment of the typhoid carrier. This indicates the importance of this work from the standpoint of public health.

Dysentery in children and studies of the bacteria in the intestinal tracts of children (Dr. K. F. Meyer, Miss Gwendolyn Morris, and Dr. R. L. Porter). This work includes a study of the bacteria present in diseased conditions as well as those present in health. It is shown that the growth of intestinal bacteria can be modified in a remarkable way by means of diet changes. This has much significance in the proper care and treatment of intestinal diseases in infants and children.

Gas gangrene. Many peculiar bacteria can produce this condition which was so troublesome during the first year of the war. A study of this group of bacteria has engaged the time and energies of many workers, as there are many technical difficulties to be overcome. Mrs. Hilda Hempl Heller and Dr. K. F. Meyer are making a careful analysis of this large group of bacteria about which our knowledge is quite limited. A reliable classification will make progress in this field much more rapid.

Liver repair and recovery from injuries. Mr. Nelson C. Davis and Dr. George H. Whipple have investigated the remarkable ability which the liver possesses of repairing promptly any extensive cell injury. The materials which the body uses to repair these complex organ cells are also studied and the danger of chloroform anesthesia is again emphasized.

Renal function in acute intoxications. Mr. Irvine McQuarrie and Dr. George H. Whipple studied the change in the kidney which develops during certain acute intoxications (intestinal obstruction, proteose and X-ray intoxications). The temporary impairment of renal function in certain conditions must be understood to insure proper treatment under such circumstances.

X-ray intoxication has been studied further by Mr. Stafford L. Warren and Dr. George H. Whipple. The fact that the cells of the small intestine are very sensitive to these rays has not been previously known and probably explains some of the well known clinical reactions following prolonged exposure to the rays.

Tuberculosis and leprosy. These two infections are common in man and obviously have great economic importance. Both diseases are due to bacteria which are much alike and are spoken of as "acid fast" because of characteristic staining reactions. It has been established that chaulmoogra oil and some of its derivatives will cure leprosy in human beings. Dr. E. L. Walker, Associate Professor of Tropical Medicine, is testing out the various derivatives of this oil and has shown that these salts exert a specific destructive action upon these "acid fast" bacilli as they are grown in the test tube. It is obvious that these salts have a favorable effect upon leprosy as it occurs in human beings. Dr. E. L. Walker is testing the drug in rat leprosy. Logically this drug should exert some influence upon tuberculosis of animals and human beings. Animal experiments are in progress and are to be watched with great interest. Through the helpful coöperation of the Veterinary Division of the University of California (Dr. J. A. Traum), Dr. E. L. Walker is extending this treatment to cattle experimentally infected with tuberculosis.

PERSONNEL

During the present year three new student fellows were appointed: Mr. Hubert R. Arnold, Mr. Francis Scott Smyth, and Mr. Stafford L. Warren.

Mr. H. P. Smith continued his excellent work in the laboratory during a part of this year. References to some of this work will be found above.

Volunteer workers again have contributed invaluable services to the laboratory and have made possible work which would otherwise have remained undone. Miss Maybelle L. Feusier, Miss Louise McRoberts, and Miss Louisa Breeze deserve especial mention and their work has uniformly been of the highest character. Unfortunately sickness has necessitated the withdrawal of Miss McRoberts and Miss Breeze. Graduate students and volunteer workers are included in the list of workers which follows. The *Collected Reprints* list will show how valuable to the laboratory were the services of these individuals.

GRADUATE STUDENTS AND VOLUNTEER WORKERS

Dr. E. C. Fleischner	Miss Helen Brown
Mr. E. B. Shaw	Miss Gwendolyn Morris
Dr. Frank Hinman	Miss Paula Schoenholz
Miss Jane Halbert	Miss Vernie Litch
Mr. H. P. Smith	Miss Louisa Breeze
Miss Maybelle L. Feusier	Miss Gladys Murray
Mrs. C. R. Christiansen	Miss Ava B. Dawson
Miss Louise McRoberts	

It is a privilege to express for the laboratory staff its appreciation of the cordial coöperation on the part of other departments and individuals of the Medical School and Hospitals.

Respectfully submitted,

GEORGE H. WHIPPLE,

Director.

UNIVERSITY INFIRMARY

BERKELEY, July 1, 1919.

To the President of the University of California,

SIR: I have the honor of presenting to you the following report of the Infirmary for the year 1918-19.

Naturally medicine plays an important rôle during a period when a great country is at war. But how far from our expectations was the development of our Infirmary on the campus of the University of California into such a center of activity as it actually became—virtually a base hospital!

Here the dispensary was open practically every hour of the day for care of the student population, as well as for the various military branches of the service, viz., United States School of Military Aeronautics, Vocational School, the Students' Army Training Corps, and the Naval Unit. Our regular staff, decimated by the demands of the Government, was substituted by civilian and military medical men who did excellent work in caring for the sick. The nursing force labored heroically and untiringly, and the resulting success in a great measure was due to their efforts. Such an organization of team-work, vigilance and patriotism as was here displayed, counts much in the hour of need.

At the opening of the fall term the University of California announced that the War Department had decided to install on the University campus, a Students' Army Training Camp. The head of the department as University Physician and Captain in the Medical Corps attached to the School of Military Aeronautics, immediately instituted plans for the medical care of these young soldiers.

This action was manifestly necessary as no provision had been made at the time by the Government for hospital accommodations. The present Infirmary, with its capacity of forty-five beds, was entirely inadequate, for the reason that all men inducted into the service, according to army regulations, if incapacitated for duty, are hospital cases and must be treated in a hospital by medical officers.

The first problem which presented itself when the University opened was to conduct the prescribed physical examination for the induction of these men into the service. This work was executed in record time. In the midst of these examinations, the customary University work, which had overwhelmed the collegiate institution during the opening weeks, was performed. To conform to the regulations, Captain Legge was ordered to secure the services of ten civilian physicians, as contract surgeons, to conduct the physical examinations.

During the first week in October, two flying cadets on furlough returned ill from the East, suffering with influenza. At the same time Dr. Paroni Meads admitted to the Infirmary several women suffering with the same disease. Other cases appeared in quick succession and the worst epidemic in our history was upon us.

The Zeta Psi fraternity house was secured as a temporary hospital. Nurses were difficult to secure on account of the great demands of the army and the community. The University Physician completed his organization, secured physicians, nurses, Red Cross workers, students who had taken courses in Home Care of the Sick, Red Cross Motor Corps, Berkeley Police Patrol and citizens. In fact, every person who could assist in any way was pressed into service. Medicines, beds, blankets and linen were secured. Cooks were found and food supplies procured. Patients continued to increase and the first barracks were commandeered and converted into an auxiliary hospital. A head nurse was put in charge and supplies, food and other necessities rushed there. The Berkeley Chapter of the American Red Cross was appealed to and the Chairman, Mr. F. W. Wentworth, sent Captain Legge a corps of Red Cross women workers to help

in the general nursing. Enlisted men were made to serve as orderlies, for the War Department refused to supply either commissioned officers or enlisted personnel for this purpose. The Berkeley Red Cross Chapter supplied many articles such as bedside tables and screens made by the boys in the Junior Red Cross. They secured sheets, pillow slips, kerosene stoves, bath robes, face masks and many other useful and needed articles. These women labored patriotically, with unequalled devotion, to aid and serve the unfortunate soldiers. They cheerfully and efficiently performed many types of work to which they were unaccustomed. Floors were scrubbed, food cooked and served, and patients comforted. In fact, any service requested of them was gladly rendered. The Chief of Police of Berkeley offered his motor patrol and several automobiles were likewise placed at our disposal by the Red Cross Motor Corps for conducting patients and medical officers to the various hospitals. Placards of instructions were prepared and distributed by the Department of Hygiene and every available means taken to combat the disease. It was at this time that the men were ordered into the barracks where the bed and air space, required by the Surgeon General's orders, could be provided. To have men living in crowded boarding houses, fraternities and clubs at this time when infection was everywhere, was out of the question, but with the opening of the barracks military supervision could be enforced and strict supervision maintained. The sick were transferred to isolation wards where routine medical observation and treatment could be undertaken and efficiently conducted. The aid afforded by the Infirmary staff, the School of Military Aeronautics medical officers, the contract surgeons, the Infirmary nursing staff directed by Miss Ethel Sherman, the Red Cross Nurses' Aids, and the students, was responsible in a large measure for the very low mortality.

It was in the midst of this period of stress and strain, after the first barracks were practically filled with the sick, that the writer of this report, after organizing the work and providing means for its continuance, having labored long under severe strain, and with tremendous responsibility, himself fell a victim

to the disease and was obliged to remain at home for ten days. The services of Major William H. Brooks, U.S.A., as chief medical officer, were then secured. During the latter's incumbency he commandeered three other barracks to be used as hospitals and convalescing wards. Later Major H. S. Kiersted, U.S.A., succeeded Major Brooks and acted as chief surgeon until the demobilization of the Students' Army Training Corps. Captain Legge, on his return from his illness, was commissioned by the War Department as chief medical officer of the hospitals and in such capacity acted until his discharge on January 2, 1919.

Such, in brief, is the résumé of the medical history of the influenza epidemic in the Students' Army Training Corps. To endeavor to mention and extend our gratitude to all the patriotic men and women who assisted with articles of food, linen and comforts of every kind, and who rendered their services and even gave their lives in the cause, would fill a good-sized volume. During the period of the epidemic the women students were inadequately provided for, as but a limited section of the Infirmary could be reserved for their use. A service department was instituted by Drs. Lillian Moore, Romilda Paroni Meads and Ruby Cunningham of the Infirmary and these, with the coöperation of the Dean of Women, and student helpers, ministered to the women who were ill in sororities and club houses. Their services were crowned with success and without their help it would have been impossible to have provided adequate medical and nursing service to our college women.

The Berkeley Chapter of the American Red Cross was our great angel of mercy. It poured forth of its every resource without stint. Scores of women, under the leadership and guidance of Mrs. S. R. McLennigen, volunteered for any needed service and labored unceasingly, night and day, for the alleviation of suffering. Over \$2000 was spent by the Red Cross for medicines and supplies and it is not too much to say that without the coöperation and assistance of that organization at this time our student mortality would have been considerably higher. To the same end, the women of the Defenders' Club, marshalled by Mrs. S. S. Marks, opened their spacious club rooms to be used

as a convalescing home. This was of inestimable service in returning the sick to health and strength.

Among the contract surgeons who served most commendably, were Drs. Burnett, Hoag, Kelly, and Bates, all members of the University Faculty. Especial mention for distinguished service should be awarded the latter, physician at the University Farm at Davis, who took charge of the pneumonia ward. At great personal sacrifice he devoted his full time to caring for the desperately ill.

Of the persons who labored heroically to relieve these prostrated men and women, and thereby became infected themselves, were seven physicians, thirteen nurses, four employees, and several student helpers and Red Cross workers. Among this number were four who paid the supreme sacrifice. Miss Alma Gunderson, for six years a nurse on the Infirmary staff, and Miss Josephine Hopf, a nurse at Barracks No. 3, gave their all and died as patriots. Two unselfish and devoted college women, Miss Elizabeth Webster and Miss Charlotte Norton, likewise died in the service of their brothers in arms. The memory of these four women should shine as an inspiration to all of what American women did for humanity when the call was sounded.

During the influenza epidemic the Infirmary cared for, directly and indirectly, some fourteen hundred patients. Out of this number, eighteen died; thirteen soldiers, four non-military college students, and one a staff nurse.

The second wave of the epidemic was at its height in Berkeley during the Christmas vacation period. Preparations were made to take care of two hundred cases, by converting the annex of Hearst Hall into an emergency hospital. Its use, however, was not required and the University authorities delayed the spring reopening for two weeks; and in the mean time the second wave of the epidemic passed with only one death. After that period a few spasmodic cases were treated at the Infirmary. The deaths from influenza were double the deaths from all causes which have occurred in the Infirmary since its inception, twelve years ago.

Realizing from the history of former influenza epidemics, that the mortality was increased 40 per cent for the five following years, our staff has, at the expense of considerable labor and time, kept a close observation on all our students who have had respiratory infections or influenza this past year. Class work and physical education were curtailed when, in the opinion of the physicians, it was believed necessary. Many examinations and periodical visits were insisted upon from students who possessed any slight post-influenzal conditions. Dr. Lillian Moore's committee continued to work among the women students and rendered excellent service to the Infirmary staff. It would constitute a great advantage to the Infirmary if Dr. Moore's work could be made permanent and be associated with the Dean of Women's office.

Respectfully submitted,

ROBERT T. LEGGE,

University Physician.

UNIVERSITY LIBRARY

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit the following report on the progress of the University Library for the twelve months ending June 30, 1919.

ACCESSIONS OF NEW BOOKS

	Volumes	Volumes
By purchase	7,196	
By binding of periodicals	2,950	
By exchange	670	
By gift	4,523	
Received by department libraries (all sources)	3,188	18,527
Volumes in library June 30, 1918		374,269
		<hr/>
		392,796
Withdrawn or lost, 1918-19		114
		<hr/>
Total volumes in library, June 30, 1919		392,682

Periodicals and serials currently received by purchase, exchange and gift number 8605, a net increase of 194 over last year.

Purchases show an increase over last year of more than 900 volumes, but this does not tell the whole story. An additional \$10,000 made available in April furnished the means for purchasing a number of important works, most of which had been on the list of desiderata for years awaiting some such opportunity. As these orders have not been filled as yet, the product will appear among next year's accessions, though properly belonging to this year. Binding also shows an increase of about

900 volumes, owing to the addition of \$1000 to the binding fund by transfer of an unexpended balance on another account. The falling off of nearly 50 per cent in accessions by exchange is due to war conditions and increased costs, which caused many institutions either to suspend publishing or to discontinue or reduce their exchange lists. The same cause probably contributed to the falling off in gifts, but it should be stated also that the largest gift of the year, the private library of the late Professor William Dallam Armes, is not shown in the figures as it is still unaccessioned.

Retirement of Mr. Rowell.—The close of the fiscal year marks the retirement from active service, with the title of Librarian Emeritus and University Archivist, of Joseph Cummings Rowell. The whole history of the development of the library from its small beginnings in South Hall is bound up with the honorable story of Mr. Rowell's career of forty-four years at its head.

From 1869 to 1874, the titular librarian of the University was William Swinton, Professor of English Literature and History, well known to his own generation as author of "Swinton's Word Analysis" and other text-books widely used in the schools, and as a war correspondent and author of "Campaigns of the Army of the Potomac" and "Twelve Decisive Battles of the War," with reference to which General Grant remarked that the correspondent had written "a history of the war from which he left me out." On Professor Swinton's retirement the position was offered to Bret Harte, formerly editor of the *Overland Monthly* of San Francisco, and famous at that time as the author of "The Outcasts of Poker Flat," "The Luck of Roaring Camp" and the poem usually called "The Heathen Chinees," which had gone the rounds of the newspapers and had pleased the American public mightily. Harte declined the offer, which opens the way to interesting speculations by the student of our literature. But the literary tradition was continued through the appointment of Edward Rowland Sill, the gentle author of a small body of verse which ranks not far below the best in American poetry. One of the humble duties to which the new librarian attended personally was the mixing of the paste used on the book plates. The next

year, 1875, Joseph C. Rowell, a graduate of '74, succeeded Professor Sill, and for six years administered the library entirely unaided. The library was then housed in the north end of the first floor of South Hall, where the physics laboratory is now, and numbered about 13,000 volumes. These cramped quarters were abandoned in 1881 for the newly erected Bacon Hall, which remained the home of the library for thirty years, until its removal to the present building in the summer of 1911. The year 1881 also witnessed a 100 per cent increase in the size of the staff by the addition of a janitorial assistant, and in 1883 this salary was divided between two assistants, R. E. Bush and George T. Clark. Mr. Clark is now the librarian of the sister university at Palo Alto. In 1886 Mr. Clark was graduated and was made a full time assistant, the first given to Mr. Rowell.

In 1875 Mr. Rowell went east and spent three months in visiting and studying the methods of eastern libraries. On this trip he met William Frederick Poole, then head of the Chicago Public Library, the originator of the far-famed Poole's Index to Periodical Literature. This project was launched at the American Library Association meeting in 1876; it was to be a coöperative undertaking, with the various important periodicals assigned to the libraries of the country for indexing purposes. Mr. Rowell compiled and furnished the index to the *Overland Monthly*. Another result of this trip was the inception of the card catalogue, which Mr. Rowell started upon his return.

Routine and the machinery of administration, necessary features of the present complicated structure with its thousands of readers and multifarious activities, have replaced the simpler methods of an earlier day; but nothing will ever replace the kindly interest and the courteous personal service which those earlier readers received from the man who made the library. Of the many who profit from them there may be some who consider and appreciate the ripe knowledge and the high ideals which went to that making; but only those who know the story can realize the devotion to duty, the patient drudgery and the unsparing attention to detail directed through so many years to the same end. And now that the time has come to rest from those

labors and to enjoy the fruits thereof, the honored presence of our Librarian Emeritus—title well earned and proudly to be worn—will continue a living reminder of the vital truths that Method is a poor substitute for Knowledge, and Apparatus for Personality.

Administration.—For nearly two years preceding February, 1919, the administrative work of the library was in the hands of Sydney B. Mitchell, now associate librarian. Though facing a situation of extraordinary difficulty through much of that period, Mr. Mitchell nevertheless found time to prepare and publish the Library Handbook, as briefly mentioned on page 8 of the last Report—a very creditable piece of work which proves its usefulness daily—and also to redraft and galvanize into life tentative plans of long standing for organizing instruction in library science as part of the University curriculum, this subject having been offered heretofore only in connection with the summer school. One class has completed the first year's work, proving the feasibility of the plan adopted. Mr. Mitchell thus describes the events of the last six months of the war period and the establishment of the courses in library science :

The last six months of 1918 were here, as in other universities, rather difficult ones. The library as a result of war conditions suffered continually from changes on its staff. Between the closing of the summer session in August and the opening of the first quarter in October, five regular members left the library service, most of them attracted by the higher salaries paid in business. All these had been here for four years or more. The S. A. T. C. created further gaps as almost all of our loan desk attendants, pages and shelvees were drawn into this organization and were thus unable to continue working for the library. Enough exempt male students were obtained to handle the shelving of books, but the superintendent of circulation, with one somewhat experienced assistant and one trained cataloguer temporarily transferred to his department, was required in the opening week of college to select and train women students to do all running and filing at the loan desk and take complete charge of the reserved book room. This necessary change from our regular policy of having only men students as pages was watched with interest. Our experience goes to show that, while not as quick in running for books, the women have perhaps the advantage in filing and other clerical work.

The S. A. T. C. both simplified and complicated the work of the library. The reduced number of advanced and seminar courses cut down the usual number of skilled assistants needed to collect the books for such courses, and the demands on the reference department and the loan desk were lighter than usual. The building was, however, frequently overcrowded, for at the request of the military authorities, four double and three single seminar rooms were released for use as classrooms, and during the evenings from Monday to Friday, the main reading room, the periodical room and the seminar rooms referred to were all reserved for the use of the S. A. T. C. Except at the reference desk all library attendants were withdrawn from the rooms, leaving these entirely under the charge of the S. A. T. C. This plan worked quite well until the armistice.

During the influenza epidemic the library coöperated in the arduous task of keeping out unmasked readers. Many of the staff were away for a week or more while suffering attacks, but no serious cases developed. During the two weeks in January when the University was still closed the library building was open for the regular term schedule, so as to provide all facilities for study for the many students who were in Berkeley awaiting the postponed beginning of classes.

Instruction in library methods had been given in the summer session for many years, and a permanent library school had long been planned. Because of its cost it had not been achieved, but during the spring of 1918 it became evident that the time was ripe to offer courses in library science during the regular session. A third of our staff had left during the fiscal year and the task of adequately replacing the younger ones was especially difficult, for the supply of trained junior assistants was less than the demand. The State University seemed the logical place to give a general education in this profession without bias in favor of the practice of any particular library. The rooms and equipment had been provided in the completion of the library building in 1917. Numerous requests for this training had been received from undergraduates of this university and from graduates of this and many others. In April, 1918, a general plan was submitted to the Committee on Courses of the Academic Senate and was accepted. It provided for four courses, each three hours per week through both regular sessions, a total credit of twenty-four units being allowed towards the degree of Bachelor of Arts. These are open only to upper division students taking a full course leading to graduation, and to university graduates who may enroll as special students. The classes are so arranged that juniors may take the first two courses, Bibliography and Cataloguing, and complete the training with Library Administration and Study and Selection of Books in their senior year. Graduates taking only the library science courses may cover all the work in one year.

Only partial instruction was offered in 1918-19, the first two courses being given by members of the library staff, who to a large extent prepared them outside library hours. From the large number of students who applied, a class of twenty was selected, five graduates, nine seniors and six juniors. Weakened health following influenza caused several to withdraw, some expecting to resume next year, so that the number who actually completed the courses was fourteen.

Reclassification and Recataloguing.—The end of the sixth year witnesses the near approach to completion of the large classes C and D (History) and the start of work on the small class Z (Bibliography and Library Science), which for technical reasons it has been thought best to take up at this point. Printed cards are being ordered for classes T (Technology), U (Military Science) and V (Naval Science), which will be undertaken next. Classes now completed are A (Polygraphy), E and F (History—America), G (Geography), GN (Anthropology), GR (Folklore), GT (Manners and Customs), GV (Sports and Games), H (Social Sciences, including Economics and Sociology), J (Political Science), and L (Education—except University of California, old number 308). About 29,000 volumes have been reclassified and recatalogued or, as accessions, have been added to these classes during the year, bringing the total to approximately 108,000 volumes, or about 27½ per cent of the library. That is, reclassification and recataloguing have proceeded at an average annual rate of less than 5 per cent for the first six years, figured on the basis of the present size of the library. At this rate it would take from twenty to twenty-five years to complete the work; but this rate cannot be maintained with the present staff. As new classes are undertaken the number of volumes reclassified in a given length of time diminishes, because of the constantly increasing proportion of new accessions falling in reclassified fields. In other words, if the number of books added to each class in the library each year be considered constant, and the number of books which the present staff can handle in a year is also constant, it is obvious that each subject reclassified increases the proportion of the year's accessions which come under the new classification; and that consequently the annual output of the staff comprises an increasing proportion of new books, and a

decreasing proportion of old books reclassified. This year new books composed 20 per cent of the total.

With a book fund restored to normal size, the annual accessions will about equal the present output of the reclassifiers. An increasing proportion of these will be handled by the reclassifiers in the first instance; the balance will fall under the old classification and will be taken up by the reclassifiers as one after another of the old classes is worked over. Thus, while the speed of reclassification is gradually reduced by increase in accessions falling within new classes, the mass still ahead is constantly augmented in the same way. Until reclassification proceeds at a rate definitely in excess of the growth of the library, no end is in sight.

Considered from the business standpoint alone, the problem reduces itself to the question whether it is preferable to maintain the present enlarged staff for an indefinite period, or further to enlarge it sufficiently to complete the work within a definite time; the staff then to be reduced to the comparatively small number necessary to meet current needs. From the standpoints of the specialist engaged in research, of the undergraduate student and of the reference department, striving to meet the multitudinous and multifarious demands of university and non-university public alike, there can be no question of the enormous advantages to be derived from completion of reclassification and of the new dictionary catalogue at the earliest possible moment. The work is of such a nature that additional cataloguers would make possible reorganization and further specialization, and a product quite out of proportion to the increase in numbers; ten cataloguers, for example, could bring the work to completion in materially less than half the time five would require. Finally as pointed out before in these reports, the completion of the present program, which provides for the fullest utilization of the Library of Congress printed cards, would render it possible to carry on current work with a smaller staff than would be required otherwise.

Old Catalogue and Depository Catalogue.—During the year the Library of French Thought (2347 volumes) and the philo-

sophical library of the late Professor George H. Howison (1235 volumes), were catalogued, and the classifying and cataloguing of the Chinese library presented by Mr. S. C. Kiang Kang-Hu was completed. More than 14,000 volumes, including continuations, were catalogued altogether. At the request of the department of Chemistry, arrangements were made to supply the department with cards for books on chemistry. All filing in the public catalogue has been done this year under the direction and supervision of the head cataloguer.

The depository catalogue suffered the handicap of several changes in curatorship. Miss Frederiksen replaced Miss Madsen, resigned, in February, 1918, serving until August 4. Miss McIver took charge September 15, continuing until May 1. Miss Hahn assumed the duties of curator in May. During the year 50,085 cards from seven libraries were filed, the Library of Congress supplying about 31,000. The catalogue now contains approximately 1,014,000 cards. A beginning has been made of clipping and mounting on cards the entries in the British Museum monthly accessions list starting with January, 1917, but these cards have not been incorporated in the depository catalogue as yet.

Loan and Shelf Departments.—The transition from a peace to a war basis and back again was more marked in the loan department than elsewhere. The draft and the S. A. T. C. took all but one of the male employees, and the fall semester of 1918 opened with a page force consisting entirely of women, students for the most part and all new to the work. Before the opening of the spring semester in February, the process of demobilization had brought back many of the old attendants, and for the last five months the staff was about evenly divided. The superintendent of circulation reports as follows regarding the work of the women attendants:

While this system (a mixed loan desk force) may have one obvious disadvantage, I think that on the whole it has worked very well. With the exception of shelving or carrying very heavy books the women have proved themselves just as efficient as the men. Taking them as a class they have been more conscientious and faithful than the men.

Circulation statistics show a falling off during the fall semester, but with the reëstablishment of peace conditions in February, begin to increase rapidly. The total for the year is almost the same as that of a year ago—411,471 volumes as against 411,820 for 1917–18. The increase in the spring semester is especially noticeable in the record of the reserved book room. The lists of books which instructors ask to have reserved for class use are growing rapidly, and the facilities of the room are in danger of being overtaxed. Owing to the greater number of books held on reserve the calls received at the loan desk for books to be used in the building show some falling off; but the demand for books for home use has increased considerably, the total for the year passing the 75,000 mark. Approximately 12,000 books were shelved in the reserved book room throughout the year. Of more than 411,000 books in all categories issued during the year, 284,187 were drawn from the reserved book room. The losses from this room total 109 volumes; figures which show a marked improvement over the old system. The present plan preserves the advantages of freedom of access to the shelves while affording a measure of protection to the books most in demand. Such protection was not possible when reserved books were placed on open shelves in the reading room.

Inventory, which was interrupted for a time by the shortage of trained assistants, was resumed in March and has progressed from class 427 through class 681, covering three of the nine stack tiers. The reclassified sections will be undertaken next. The report on losses is not particularly encouraging; 187 volumes from the main stack (doubtless including some losses incurred in former years but not previously reported) and 45 volumes from the reading room and seminar rooms. It is doubtful if such losses can be materially reduced without restricting access to stack and seminar rooms to an undesirable extent. It should be possible, however, to reduce the losses from department libraries, which reach 424 volumes from the comparatively small collections involved. This points the need of reforms in the administration of several departmental libraries, which should be effected promptly by the departments concerned.

With two exceptions, Philosophy and Anthropology, all departmental libraries on the campus were checked during the Christmas vacation, and losses noted.

Reference Department.—Increased demands upon the reference department have come from faculty and non-university sources, the latter by mail and from residents of the bay region using the library in person. To meet these requests the department has collected information and compiled bibliographies on a variety of subjects, the range of which is indicated by the titles of a few of the more important, as follows: Foreign trade, educational research, the junior high school, home demonstration work, community councils, school surveys, measurement of class room product, weighted crediting, administration of reform schools, teachers' salaries, the education of the exceptional child, the culture of belladonna, the manufacture of sulphuric acid from smelter fumes, the manufacture and use of cocoanut oil, war bonuses, and the land question in England.

The routine work of the department, including the listing of United States documents, maps, and pamphlet accessions, has been kept up to date. Since January one of the student assistants attached to this department has been on duty during library hours, to keep the shelves in order and assist readers to locate books shelved in the reading room, and generally to supervise the room.

To minimize the loss among new books displayed on open shelves in the reading room, where they were not under effective supervision, the plan was adopted upon the completion of the building in 1917 of transferring the display to shelves in rear of the reference desk. This gave the needed protection, but the books were not as accessible as seemed desirable, and the crowding of readers into the reference desk enclosure often hampered the work of the department. In May, 1919, the display was moved to the reading room desk, where the books are both in the public eye and under that of the reading room assistant. The books are changed every week, remaining on view from early Monday morning until noon Saturday, at which time they are shelved or laid aside for readers who have placed reserves on them during the week; and the cards are filed in the public catalogue.

One unforeseen result of turning the new east reading room into a periodical room administered from the reference desk has developed during the year. It was believed that by assigning the periodical records and the handling of mail to the accessions department, placing unbound periodicals on open shelves, and permitting free access from the periodical room to the enclosed portion of the stack containing the bound sets of general periodicals, the demands upon the reference department from the periodical room would be minimized. As a matter of fact the increase in the use of periodicals, especially by students in courses dealing with war and peace issues, necessitated the transfer of current issues of the more important monthlies and weeklies to shelves behind the reference desk, where they are handled in the same manner as reserved books. The charging and discharging of these reserves has taken practically the full time of one assistant. The records show more than 10,000 calls for reserved periodicals during the year, besides some 4300 calls for periodicals for home use.

Library Staff.—In the Report for 1910–12 a schedule of salaries and of annual increases was proposed which, though never formally approved, was accepted in practice, and recommendations based thereon in the annual budget estimates of the library have been followed. At the time this schedule was drawn up the salaries provided were fair, though by no means excessive; but salaries scaled to the year 1912 do not meet the requirements of the year 1919. In view of action taken by the University and by the Legislature to relieve the situation in respect to the faculty it is evidently unnecessary to rehearse here the arguments for increased compensation for University employees in general; but the case of the library employees has certain distinctive features which should be pointed out. Technically the library employees are administrative officers, although two members of the staff are members of the Academic Senate. Several are conducting courses of instruction for which University credit is given, and all above the grade of junior assistant are college or university graduates with the best technical training and considerable professional experience, and hold Regents'

appointments. Actually, as has been said, members of the library staff are administrative officers in respect to summer vacation, sabbatical leave, etc., but officers of instruction in matters of pay.

As a matter of fact the library has to meet competition from both sides. Two assistants who have been with us for years are leaving to accept teaching positions, while practically all of the year's losses among the clerical assistants are due to the lure of business opportunity. The competition of other libraries has been keenly felt for years, and is growing stronger. High school libraries have made inroads upon our staff, but they are not alone. When the salary schedule of 1912 was in the making detailed information was gathered from the other university libraries of the country, and our schedule as finally drawn up stood well to the front, as was indeed necessary in view of the fact that we had to draw upon the east and middle west for our trained assistants. Within the last few weeks the librarian of one of the larger universities of the middle west, which in 1912 paid its employees considerably less than was proposed here, expressed his surprise at finding the situation reversed; and this is very generally the case at the present time.

In libraries generally, but particularly in large reference or university libraries, continuity of service is a very important consideration. A constantly changing staff, unfamiliar with the resources of the library and its complicated routine and not acquainted with local conditions, not only fails to give efficient service to the public, but adds materially to the expense of administration. It functions slowly and uncertainly, with constant demands upon the time of the librarian and of the department heads. Every large library has problems and conditions peculiar to itself, the demands upon the individual are heavy, and training and practice in the particular library are necessary to an efficient, rapid and accurate performance of duty. The value to such a library of a well trained and competent assistant increases rapidly with length of service. To a lesser degree this holds true for clerical assistants, pages and others, because the continual breaking-in of new employees to unfamiliar work, even where the technical demands are not great, involves deterioration in service and increased expense.

The experience of the past two years has demonstrated plainly the necessity for revision of the salary schedule. We cannot hope to meet present competition otherwise; and a glance at the list of the year's resignations will show that it must be met or the service must suffer. When a member of the staff holding a responsible position resigns, the exigencies of the situation sometimes compel a readjustment of work and the employment of a substitute of lower grade. When a vacancy so caused is filled by the employment of another assistant of the same grade to do the same work, in practically every case it is necessary to increase the remuneration. The injustice of this to those who remain with us is obvious; its only excuse is the impossibility of doing anything else. Vacancies must be filled, and if filled from outside it is necessary to pay at least what is paid elsewhere for the same work. A definite programme for a revised salary schedule for the library will be presented for consideration before the next budget estimates are called for.

Appointments.—Josephine Halverson, clerical assistant, August 1, 1918; Irma Brink, Gerda Frederiksen and Mrs. Lillian C. Ford, junior assistants, August 5, 1918; Myra O'Brien, senior assistant, August 12, 1918; Elta L. Camper, junior assistant, September 3, 1918; Della J. Sisler, senior assistant, and Janet Willson, clerical assistant, November 1, 1918; Linnie M. Ryan, clerical assistant, February 1, 1919; Ivander MacIver, junior assistant, and Renée C. Gable, clerical assistant, June 1, 1919; Julia Benjamin, clerical assistant, June 23, 1919.

Resignations.—Alice E. Ramsay, junior assistant, August 1, 1918; Myrtle I. Roberts, librarian's secretary, August 6, 1918; William K. Porter, senior assistant, September 1, 1918; Ruth B. Compton,* senior assistant, September 11, 1918; Cora R. Brandt, senior assistant, September 14, 1918; May Dornin,† clerical assistant, October 1, 1918; Aileen Coombs, clerical assistant, October 4, 1918; Marjorie Hopkins, clerical assistant, November 7, 1918; Mrs. Ruth Smart Belt, junior assistant, December 31, 1918; Maud H. Horn, clerical assistant, April 19, 1919; Mrs. Lillian C. Ford, junior assistant, May 6, 1919. Reginald Sweetland, student assistant in the loan department since October, 1915, and Milutin Krunich, employed in a similar capacity since early in 1917, left at the end of the fiscal year to accept appointment to the faculty.

* To accept appointment as librarian of Reed College.

† Transferred to hour basis to permit registration in the University.

Library Training.—The customary six weeks' course in library methods was offered in the summer session of 1918. As Mrs. Theodora R. Brewitt, then principal of the Los Angeles Public Library Training School, who was to have had general charge, was obliged to withdraw shortly before the opening of the session, Miss Nella J. Martin of our staff took over this work and gave the course in cataloguing and classification. Miss Coulter and Mr. Mitchell gave their accustomed courses, Miss Harriet G. Eddy, county library organizer of the California State Library, addressed the class on California library law, and Miss Gertrude Andrus, children's librarian of the Seattle Public Library, conducted a course on work with children and schools, illustrated with children's books courteously supplied by the Berkeley Public Library. The decision to admit to the library methods course only applicants already engaged in library work resulted in a smaller class than usual, but one of better average ability. Of twenty-three registered, twenty-one completed the course successfully.

Owing to the inception of the course in library science extending through the college year the summer course is not offered in 1919. Whether it will be resumed later will depend upon the development of the larger project. There is undoubtedly a demand for it which in the nature of things cannot be met by the longer course; but the longer course is quite all the library staff can handle under existing conditions.

The coming year is regarded as the test period for the library science courses. For the first time all four courses will be offered, and the class which began in the fall of 1918 will finish. Although plans have been laid to secure the services of several instructors in special subjects from outside, the bulk of the work will be done by members of our own staff in addition to their regular duties. This method cannot be continued; the demand upon the staff is too heavy. The programme will be carried through the coming year in order to test the plan of the courses and to ascertain the demand for vocational training in this field in this University. If the results justify it a programme will be presented looking toward a permanent organization of library instruction with a

separate teaching force, supplemented by members of our own staff and visiting instructors from the staffs of other libraries.

Inter-library Loans (statement prepared by Mr. Rowell).—This most valuable auxiliary service was first advocated by our library in 1886, was authorized with certain limitations by the Board of Regents in 1894, and four years later was given free and full scope. This system, inaugurated formally by us, now obtains all over the United States, to the unmeasurable benefit of scholars everywhere. California is peculiarly fortunate in being able, through its efficient combination of local, county and state libraries, to utilize its book resources in fullest extent. The next century, owing to the vast accumulations and even faster production of books, will witness a necessary specialization in acquisition and consequently greater dependency of libraries upon each other.

During the past year our loans to other institutions numbered 225 (476 volumes), and to departments of the University outside campus limits 50 (118 volumes). We were deeply indebted to other libraries for 84 loans (138 volumes).

Financial Statement.—The library budget for 1918–19 carried appropriations as follows:

Salaries and assistance (including recataloguing)	\$54,000.00
Binding	5,000.00*
Expense and equipment	5,000.00
Books	25,000.00†
Total	\$89,000.00

The appropriation for books consists of the following items:

Income from gift funds restricted to specified uses	\$2,930.00
Income from Reese fund (general)	\$2,500.00
Income from Davis fund (general)	500.00
University appropriation	19,070.00
	<hr/>
	22,070.00
	<hr/>
	\$25,000.00

* Increased during year by transfer of \$1000 from Assistance.

† Includes \$10,000 appropriated “for books to be purchased after the war,” made available in April, 1919.

Distribution of \$22,070.00:

Periodicals, sets and war emergency.....	\$5,000.00
Works of general interest	750.00
Librarian's fund	750.00
Purchase of books after the war (became available in April, 1919)	10,000.00
Departmental allotments on unit bases	5,570.00
	<hr/> \$22,070.00

Respectfully submitted,

HAROLD L. LEUPP,
Librarian.

APPENDIX

A. IMPORTANT ADDITIONS, 1918-19

- Antiphonale sarisburiense. Fasc. 1-24.
Bombay natural history society. Journal. Vols. 1-25.
Canada. Sessional papers. 1867-1893. 217 vols.
Elliott. New and heretofore unfigured species of birds of North America.
2 vols.
France. Comité des travaux historiques et scientifiques. Bulletin arché-
ologique. 1883-1915.
Irish archaeological and Celtic society. Publications. 25 vols.
Istituto storico italiano. Fonti per la storia d'Italia. 36 vols.
Jaillot. Recherches critiques, historiques, et topographiques sur la ville de
Paris. 5 vols. and maps.
Journal of gas lighting, water supply and sanitary improvement. Vols. 1-
116.
Lecomte. Costumes civils et militaires. 1200-1820.
Millais. Rhododendrons.
Niccolini. Le case ed i monumenti di Pompei. 4 vols. in 8.
Rehder. Bradley bibliography . . . of the woody plants of the world.
5 vols.
Revue politique et parlementaire. Vols. 1-89.
Seeböhm. Monograph of the Turdidae.
U. S. Congressional set. 46 vols. lacking in early part of file.
Yorkshire archaeological society. Record series. Vols. 1-58.

B. SOME GIFTS OF 1918-19

(Statement prepared by Mr. Rowell)

Mr. J. C. Cebrian, in continuation of former gifts, presented over 500
volumes relating to Spanish literature, history and art.

The very extensive and valuable collection of piano music gathered by the late Samuel G. Fleishman was presented by Mrs. Fleishman.

From the heirs of the late Professor William Dallam Armes, at the suggestion of Mr. C. W. Armes, of Oakland, there were received 1680 volumes from his private library, many of them bearing his annotations, which in part will be placed permanently in the English seminar room. Included in this gift were his lecture notes and lantern slides illustrating periods of English literature, numerous framed portraits of eminent authors, with autographs, specimen pages from medieval illuminated manuscripts, and a large collection of Houseworth's photographs of California celebrities. His very extensive and valuable collection of Japanese prints and curios is temporarily placed in the Armes Memorial Oriental Art room on the fourth floor.

The technical books of the late Professor Edward Booth were given by his widow to the Chemistry department library.

Mrs. Katharine Hooker of San Francisco presented us with the extremely rare Petrarca's *Epistolae familiares*, Venice 1492, and 160 other volumes of Italian literature and history—none being duplicates.

The last gift to the library by our constant friend—the revered Mrs. Hearst—was a photocopy of the 1615 (first) edition of Cervantes' *Ocho Comedias*.

A complete collection of all printed poems, orations, and other literary papers of the late Regent Joseph W. Winans was given for the archives by Mrs. Sara A. Winans. The poems mostly appeared in California newspapers, as far back as 1855, under the pseudonym "Glyceus."

Minor interesting gifts were: Laking's *Armoury of Windsor Castle*, from Mr. Thomas L. Miller; two copies of Omar Khayyam, published in a miniature edition of only thirty-five copies, and dedicated to Frank G. Easterby and Edgar C. Sutcliffe of the class of 1878, from Charles Dana Burrage, of Boston; three beautiful specimens of the California printer's art, from Mr. Albert M. Bender; the *Tomb of Nakht at Thebes*, from the Metropolitan Museum of Art, New York.

For the coin collection Professor M. W. Haskell gave a one-dollar bill dated 1852, of the "Independent Hungarian Government," bearing the portrait and autograph of Louis Kossuth; and Miss Margaret E. Martin contributed a Siamese silver coin.

BANCROFT LIBRARY

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit the report of the Bancroft Library for the year ending June 30, 1919.

In the course of the year several important gifts have been made to the Bancroft Library. Of these the most notable is the archive of the California Food Administration, which was procured through Mr. Ralph P. Merritt, Federal Food Administrator for California. This large collection, which fills twenty filing cases, will be an invaluable fund of information for the study of the part played by California in the Great War. Another notable gift consists of the historical manuscripts of the late historian, Mr. Zoeth P. Eldredge, of San Francisco, which came to the Bancroft Library through the generosity of his wife and daughters, and by the express wish of Mr. Eldredge. In this collection conspicuous items are a card index of several thousand names of California pioneers, and a certified copy of the original and unpublished manuscript diary of Father Pedro Font, recording the migration of the Anza colony to San Francisco in 1775-1776.

Mr. E. L. Doheny, of Los Angeles, provided \$1200 to pay a cataloguer of the recent Mexicana contained in the collection, in order to make it available for the use of the Doheny Mexican Commission, which did most of its work here. Mr. Doheny also donated \$600 to pay a research assistant, employed in editing records of early Spanish exploration and settlement in California.

Further cataloguing has been done in the English materials on California by the attendants. The large newspaper collection

has been rearranged and classified in part. From the small funds available for expense and equipment about \$250 were expended for purchase of books, a trifle over \$300 for binding, over \$200 for manuscripts, and the remainder for materials used in cataloguing, and other incidentals.

The Library is the most important adjunct to the Department of History. It provides a laboratory for the researches of several of its professors and most of its graduate students, who in recent years have made notable contributions to historical knowledge, and have brought distinction to the University. The Library, likewise, is headquarters for the California Historical Survey Commission, of which the Curator is a member. The work of the Commission, under the immediate charge of Dr. Owen C. Coy, is at present directed toward the publication of a Guide to the County Archives of California and the investigation of the architectural history of the Spanish missions.

If it is to realize its possibilities the Bancroft Library is in urgent needs of larger funds for purchases, research, editorial assistance, and the physical arrangement of its great wealth of materials.

Respectfully submitted,

HERBERT E. BOLTON,

Curator.

LICK ASTRONOMICAL DEPARTMENT

LICK OBSERVATORY

MOUNT HAMILTON, July 1, 1919.*To the President of the University,*

SIR: I have the honor to submit herewith my report for the period July 1, 1918, to June 30, 1919.

The work of the department has proceeded with efficiency greatly reduced under war conditions.

Astronomer William H. Wright has been absent from Mount Hamilton during the whole of the academic year. He served as a substitute professor in the Berkeley Astronomical Department until early October, and from late January until the close of the second semester. Between October and January he was in the service of the United States Army at the ordnance proving ground, Aberdeen, Maryland. He returned to Mount Hamilton on June 30, 1919, following an absence of nearly a year and a half in both direct and indirect war service.

Astronomer Heber D. Curtis was absent from Mount Hamilton during the first ten months of the year. He taught navigation in the Summer Session of the University as a part of the course in preparation of ensigns for service in the United States Navy. Immediately following the close of the Summer Session he went to Washington as Physicist in the Bureau of Standards, with duties mainly in the design and development of photographic and optical apparatus for the use of the army and navy. From January 1 until his resignation took effect on April 30, he acted as Chief of the Optical Instrument Section in the Bureau. In the past two years Mr. Curtis' absences on war service have amounted to about eighteen months. Mr. C. D. Shane,

University Fellow, returned to Mount Hamilton early in March, following an absence of more than a year and a half in charge of United States Shipping Board Training Schools. Astronomer R. G. Aitken was unavoidably absent seven weeks in October and November. Other members of the staff were absent on indirect war service during short periods of time.

The position of engineer, which was allowed to become vacant on March 1, 1918, was refilled in April, 1919.

No expensive new equipment, either inside or outside of the Observatory buildings, has been obtained within the year, and the use of labor and materials in the maintenance of Observatory property has been kept at as low a level as possible.

The efficiency of our branch observatory at Santiago, Chile, has suffered similarly under war conditions. It happened, by virtue of income tax and many uncertainties, that a few patrons of the southern observatory were obliged to terminate or delay their financial contributions, and the available resources were on that account considerably reduced. The unfavorable rate of bank exchange provided an additional embarrassment. The average equivalent of one gold dollar during the year has been approximately four pesos, whereas the normal rate for many years before the war was in the neighborhood of five pesos. Inasmuch as the available funds are expressed in a reduced and limited number of gold dollars, whereas the salaries and maintenance expenses in Chile are paid in pesos, the financial situation has been difficult. The costs of living have kept pace in Chile with those in other countries. Efforts to increase the resources did not meet with success until in recent weeks, but the prospects for efficiency in the next three years are now excellent.

Dr. George F. Paddock had been appointed Acting Astronomer in charge of our observatory at Santiago, Chile, but, on account of the financial embarrassments, and, in a minor degree, of the military draft regulations, his departure for Chile during the year could not be justified. He will sail in the near future to assume his duties.

Provision should be made for the completion of the heating plant, including the building to contain the shops, the electric engine generator and storage battery, etc., which was begun in 1917, but postponed in order that the labor and materials should be available to meet war requirements. In the meantime the costs of construction have increased enormously.

The eclipse instruments, left in Russia at the end of August, 1914, and which started on the long homeward journey on August 15, 1917, via Vladivostok, Kobe, and Vancouver, did not reach Mount Hamilton until August 21, 1918. The instruments were found to be in good condition, except as to the chronometer, which had suffered minor damage.

Reference was made in the report of last year to the eclipse photographs secured in June, 1918, at Goldendale, Washington.

The spectrograms of the corona have been studied in detail by Messrs. Campbell and Moore. The results may be summarized as follows:

1. The wave-length of the green line in the spectrum of the hypothetical element coronium, based upon 3-prism dispersion, is 5302.98A on the Rowland system.

2. Sixteen bright lines have been observed on the 1-prism spectrogram of the corona. Four of these appear not to have been observed previously.

3. The spectrogram of the inner corona obtained with an objective grating spectrograph shows that the distribution of the coronium material around the sun's edge is very irregular. The several well defined maxima of intensity in the coronium image, although close to prominences, do not coincide with them; in each case the prominences are closer to the solar equator than the coronium maxima. However, the fairly close proximity of the two classes of objects suggests that there is some degree of relationship between them. The faint band of continuous spectrum passing through each maximum of the coronium ring appears from our results to have its origin in the same strata that give rise to the coronium radiations. An examination of similar photographs obtained by the Crocker expeditions of earlier years, as well as by observers from other institutions, are to the same effect.

An attempt was made by Mr. Moore to compare the main features of last year's corona with the positions of sunspots and faculae as they existed at the time of the eclipse. For this purpose the Mount Wilson Observatory generously loaned us its solar photographs secured on the eclipse date and on several days preceding and following that date. The results failed to indicate a definite relationship between the coronal structure and the sunspots and faculae.

Our coronal photographs of 1918 were compared with photographs obtained by the Lowell Observatory expedition in Kansas, thanks to the courtesy of Director Slipher in supplying copies of the Kansas negatives. The scales of the two sets of photographs are different and the atmospheric conditions were considerably the poorer in Kansas, so that the comparisons were difficult and somewhat unsatisfactory. Nevertheless, there is evidence of slight changes in the details of coronal structure in the half hour which elapsed while the moon's shadow was traveling from Washington to Kansas. We are unable to say that motion of the coronal structure away from or toward the sun occurred, but minute changes are evident. The forms of coronal structure appear to have changed more than the positions of the same structure.

The last annual report referred to the eclipse photographs taken in a search for the so-called Einstein effect. The cameras with which these photographs had been secured at the eclipse station in June were reassembled on Mount Hamilton in January, and the region of the sky which had contained the eclipsed sun was photographed by Messrs. Campbell and Moore. Following his return to Mount Hamilton on May 1, Mr. Curtis assisted the instrument maker in constructing a large measuring microscope for use in comparing the positions of the stars photographed on the duplicate sets of plates. He has measured the plates in a preliminary way and has compared the results. If an Einstein effect exists, then the stars lying very nearly in the direction of the eclipsed sun should have their apparent angular distances from the sun on June 8 expanded slightly as an influence of the sun's gravitational field upon the stellar rays passing

close to it. The results to date do not show such an effect, but much remains to be done before a positive statement can be made.

Mr. Curtis has found that our eclipse photographs obtained in the year 1900 and other photographs of the same eclipse obtained by Professor Burckhalter of the Chabot Observatory may apparently be used to great advantage in a search for the Einstein effect, and he is preparing to secure night photographs of the same region of the sky, with the same lenses, in order that the duplicated plates may be compared.

The 36-inch refractor has been used every good night, about five nights per week, in the continuance of programs for determining the radial velocities of the fainter naked eye stars, or of stars possessing special interest. Six hundred and fifty-three stellar spectrograms have been obtained with 3-prism and 1-prism dispersions. The observations were made chiefly by Messrs. Moore, Paddock, and Thiele, and in lesser degrees by Miss Fairfield, Miss Cummings, and Mr. Shane. The 3-prism spectrograms for radial velocity, numbering 510, have been measured and the measurements converted to radial velocities, chiefly by Miss Hobe and in part by Dr. Thiele. About fifteen of the observed stars have been found to possess variable radial velocity, thus indicating that they are binary systems.

The interesting changes occurring in the spectrum of Nova Aquilae have been recorded by means of 106 spectrograms obtained with 1-prism dispersion. This nova, at discovery on June 8, the brightest of its class in the last four centuries, has followed in general the usual history of novae, but because of its unusual brightness and possibly because of its relative nearness the spectral changes have been observable with special clearness.

Ten spectrograms, of 1-prism dispersion, relate to the very red stars known as Class N, whose radial velocities have been under investigation by Mr. Moore. These stars are relatively very faint in the photographic region. Exposures of five or six hours are required to record their spectra, and our knowledge of the spectral details is meager. Mr. Moore has employed a method of measuring these spectrograms which seems to be sensibly independent of the wave-lengths of the spectral lines.

Two or more observations of eight Class N stars have thus far been secured. Their average radial velocity, after correcting for the motion of the solar system, is 15.1 km. per second. This is a velocity of the same order as that possessed by the yellow and red stars, Classes G, K, and M, a result of much interest in that it apparently places these very red stars in close relationship to the yellow and red stars and definitely separates them from the blue stars, Classes A and B, which have much smaller average radial velocities. It is planned to strengthen the results by observing possibly a dozen additional Class N stars in the same manner.

Twenty-seven of the spectrograms obtained by Mr. Shane with the 36-inch refractor belong to Class N stars. The purpose is to contribute to our knowledge of the details of these interesting spectra, particularly in the regions of longer wave-lengths. Some of the Class N stars which are variable in brightness are under study with a view to observing the spectral changes which occur as functions of their brightness in the light cycles. The slitless spectrograph attached to the Crossley reflector has also been utilized in the gathering of data relating to this problem.

The observing programme in Chile throughout the year has related chiefly to radial velocity observations of the brighter southern stars by means of the 3-prism spectrograph attached to the 37-inch reflecting telescope. All of the observations were made by Mr. Huffer, assistant in charge, and the measures and reductions of the spectrograms are up to date.

An extensive study of the stellar radial velocities observed thus far at Mount Hamilton and at Santiago, Chile, is under way, with a view to determining the systematic errors of the series made with the different degrees of dispersion and for the stars of different spectral types. This is preparatory to the appropriate publication of all of the results in the near future.

Astronomer R. H. Tucker has been engaged chiefly with the reductions of the meridian circle observations made by him in the preceding year. These relate to 1068 stars distributed over the zone lying between 50° and 55° of north declination. The reductions have been completed and the positions of the stars

have been transmitted to the Allegheny Observatory, where they will serve as the accurate basis for photographic determinations of the positions of about 8600 stars in the same zone of the sky. Mr. Tucker has also been engaged in making the final reductions of the fundamental observations of star positions conducted with the meridian instrument in the years 1905–1908, which were delayed by his absence of three years in Argentina, and by the subsequent taking up of more urgent problems.

Astronomer R. G. Aitken has used the 36-inch refractor about two nights per week in the continuance of his study of double stars. He has made 828 complete observations of double stars, chiefly of doubles on his own list of discoveries. He has now remeasured the position angles and distances in more than 2000 of the 3000 pairs of stars discovered by him. He finds that about 15 per cent of the systems give clear evidence of motion in the interval of eight to eighteen years since discovery. In about half of these cases the motion is relatively rapid. Mr. Aitken has also continued his observations of well-known double star systems in which the motions are rapid, devoting his efforts chiefly to those systems which are too difficult to be measured at other observatories. Mr. Aitken's measurements of his double star $A417 = 83 \text{ Aquarii}$ have permitted him to compute a preliminary orbit of the system. He finds that the period of revolution is about 23.8 years. This is the second binary system to the knowledge of which he has been the sole contributor—the discoverer, the observer, and the computer. Mr. Aitken has continued his statistical studies of the visual binary stars. Among other results he finds that twenty-one binary systems whose distances and orbital elements are now well determined, are each, on the average, about twice as massive as our sun. Mr. Aitken's book, "The Binary Stars," prepared last year as one of the semicentennial series of University publications, issued in October, 1918, has been favorably reviewed in many astronomical journals. Mr. Aitken devoted considerable time to the editing and publication of the Adolfo Stahl Lectures in Astronomy, as a service to the Astronomical Society of the Pacific and to the public.

Dr. W. F. Meyer, Martin Kellogg Fellow, has made extensive study of certain nebulae by means of polariscopic apparatus attached to the Crossley reflector. Certain hypotheses as to the nature of nebular radiations assume that light rays originating either in nuclei of certain nebulae, or in stars immersed in other nebulae, falling upon dark nebular materials render these materials visible. If this is true, we should expect that the light thus reflected or scattered would show evidences of polarization more or less strong. Twelve nebulae were satisfactorily photographed through analysing media and their images critically examined. In no instance was the evidence of polarization sufficient even to suspect its presence. The sensitiveness of the apparatus was tested thoroughly in the laboratory by means of light affected with certain percentages of polarization. Mr. Meyer concluded that if the light coming from the nebulae under investigation is modified by reflection or scattering by small particles, the proportion of light thus polarized is less than 10 per cent of the light received from these objects. The conditions of observation for some of these nebulae were so favorable that if they are shining by reflected and scattered light we should expect that the proportion of polarized light would considerably exceed 10 per cent. The observations, while not opposed to the reflection hypothesis of nebular radiation, do not support the hypothesis. It is planned to extend the observations in the coming winter with more favorable instrumental conditions.

Mr. Aitken was elected a member of the American Philosophical Society in April, 1919.

Mr. Curtis was elected a member of the National Academy of Sciences in April, 1919.

Mr. Campbell was elected a Correspondent de l'Institut de France in the Section of Astronomy in 1918, and a Correspondent du Bureau des Longitudes in 1919.

Mr. Campbell was absent from Mount Hamilton from June 15 in connection with the international scientific meetings to be held in Brussels on July 18-28, 1919. He is chairman of the American Section of the International Astronomical Union, which met in Washington on June 23-24, chairman of the astronomical

delegation appointed by the American Section to serve at Brussels, and chairman of the American delegation to the meeting of the International Research Council which occurs at the same time and place.

Respectfully submitted

W. W. CAMPBELL,

Director.

DEAN OF THE LOWER DIVISION

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit herewith a report on the work of the Office of the Dean of the Lower Division for the year ending June 30, 1919.

The establishment of the Students' Army Training Corps, the Naval Unit, and the army training detachments with other unusual conditions incident to the war, created numerous new problems in the undergraduate life of the University. The entire time of this office was taken up with these tasks during the fall quarter. For many of the complications arising out of the experiment of the Students' Army Training Corps no precedents existed, and their solution was as a consequence not easy. The epidemic of influenza added greatly to the difficulties. While it is not believed that this government plan for the training of officer material was workable in the original form, it must be granted that the brief period of its existence from October 1 to the signing of the armistice, together with the interference due to the influenza, did not permit a fair opportunity to test its merits, and to make the revision of details necessary for its satisfactory working.

With the discontinuance of military activities on the campus in November came many readjustments immediately necessary with the return toward normal conditions. The spring semester was lengthened in order to give students an opportunity to complete substantially the year's work. Adjustments were necessary for men returning from military service, and these will doubtless continue for some time to come. Undergraduate life

resumed many of its former aspects, but the reaction from war conditions left indications of unrest and instability. It is hoped that with the coming academic year the reversion to normal academic conditions may be completed.

The absence of upper classmen has been greatly felt during the war. Great credit is due to the few senior and junior men who remained, for their work in maintaining and continuing student self-government and preserving undergraduate institutions.

The absence of upper classmen in fraternities has resulted in some cases in the lowering of their scholarship standing, and in a less stringent observance of standards of conduct. It is hoped that fraternities will again resume the responsibility of closer control of their members and continue the movement which had gained headway nationally at the opening of the war, toward making the fraternity a more vital asset of the institution to which it is attached.

Living conditions in the university community are still very unsatisfactory. Building operations having been virtually suspended during the war, additional housing accommodations have not been provided in the proportion of the increase of the population of Berkeley. Indications are that the total attendance at the University will be greatly increased, both by the return of old students who have been absent on account of the war, and others whose entrance into the University has been delayed for the same reason. It is anticipated, therefore, that at the opening of the fall semester the difficulties of obtaining adequate housing accommodations will become very acute. The best solution of this problem would seem to be some system of dormitories. The need is particularly important for freshmen. It seems inevitable that the University must, sooner or later, undertake the building of dormitories as a solution of this very pressing problem.

It has been the policy of the University to provide instruction in every subject for which there seems to be a legitimate demand, and to provide this instruction practically free to all who are qualified to receive it. As a result of this policy, the University is now, and has been for some time, face to face with the necessity

of either doing this work inadequately, or considerably increasing its teaching staff. It is impossible to teach many elementary subjects efficiently in large classes. The budget of the University does not provide sufficient funds so that departments may meet this situation. If the facilities of the University are to remain open to all who desire and who are qualified to enter, and if the University continues to offer all of its present types of instruction, additional funds must be forthcoming. If the state cannot provide the necessary money, then a tuition fee seems inevitable. While the imposition of such a fee would doubtless deprive some students of the opportunity of attending the University, free tuition scholarships might be provided in sufficient numbers to assist the worthy. The levy of such a charge will, for the most part, fall upon those citizens of the state who are best able to pay and who, on the other hand, receive the greatest profit. While this would be contrary to the policy under which the University has been operating in the past, nevertheless it seems to me to be a proper and just solution of this pressing question. A fee as low as \$50.00 a year would provide over a quarter of a million dollars additional income, which would in turn provide living salaries for an adequate number of instructors in the courses in which the instruction inevitably must become less efficient if no additional help is forthcoming.

Respectfully submitted,

T. M. PUTNAM,

Dean of the Lower Division.

MEDICAL SCHOOL

SUMMARY OF MEDICAL SCHOOL REPORTS

SUBMITTED TO THE DEAN BY DEPARTMENTS

Anatomy.—The department has continued its research program, the results of which have from time to time been indicated in these reports. During the past year a portion of the comparative researches on vital stains, which have occupied Dr. Herbert M. Evans, Professor of Anatomy, for the last few years, has been completed for publication in conjunction with Dr. K. J. Scott, Instructor in Anatomy, and will appear as one of the volumes issued by the Carnegie Institution of Washington. In the paper mentioned an effort has been made to point out and analyze the differing reactions of the two great cell types of the connective tissue.

The studies which have been conducted in conjunction with Professor J. A. Long of the Department of Zoology on the physiological anatomy of reproduction in the rat have continued to yield significant results, which it is hoped will be summarized in the ensuing year. Largely due to the previous researches of Dr. J. A. Long, Assistant Professor of Embryology, it has been possible for us to establish the existence of a typical oestrus cycle in this mammal and to begin a research program on the influences which will affect it. These studies will include, in particular, tests of altered metabolism and of organotherapy.

Following a method for the identification of corpora lutea by means of vital stains which was worked out in this laboratory, Dr. G. W. Corner, Assistant Professor of Anatomy, has, in conjunction with F. H. Hurni, established the fact that several preparations of corpus luteum have no inhibitory effect on ovulation. At the same time Professor Corner has brought to a conclusion a reinvestigation of the histogenesis of the corpus luteum in the pig, a study greatly facilitated by the fact that he had previously established the existence of spontaneous ovulation at oestrus in this animal. By securing early stages of such physiologically controlled material, it was possible for the first time for an undoubted histogenetic sequence to be secured. These studies would appear to have established the participation of the follicular theca interna in the cellular make-up of

the yellow body, while reaffirming the predominant rôle of granulosa hypertrophy in the formation of this structure.

Brief abstracts of the successful work of Dr. P. E. Smith, Assistant Professor of Anatomy, on hypophysectomy in the early Anuran tadpole have been contributed to various journals and, in addition to this, Professor Smith has undertaken to present a comprehensive and connected memoir on this subject. In this connection it may be of interest to report that we have attempted to gain the coöperation of many of those interested in medical and biological education and research in the establishment of a national memoir series for such publications.

Dr. John S. Marshall, Assistant Professor of Biochemistry and Dental Pathology, has continued his work on tooth growth and nutrition, which has been so generously supported by the Research Fund of the Dental Society of the State of California.

Dr. R. O. Moody, Associate Professor of Anatomy, has been on Sabbatical leave, and it has been difficult for the department to nominate a temporary substitute for teaching the course in General Human Anatomy which is offered for students in the College of Letters and Sciences intending to major in hygiene or physical education and for those who expect to take the joint course offered by this college and the Training School for Nurses. It will be necessary for the department to set aside an additional instructor, or assistant, for this work and it will be necessary for a separate equipment for this instruction to be built up.

The department has suffered the loss of Dr. G. W. Corner, Assistant Professor of Anatomy, who goes to the Johns Hopkins Medical School to become a member of the recently reorganized Department of Anatomy there.

The department has been fortunate in adding to its personnel Dr. Victor E. Emmel as Associate Professor of Anatomy, whose investigations in hematology make it possible for us to accent this interest both in instruction and research.

Professor Evans has been elected a member of the Executive Committee of the American Association of Anatomists.

In conclusion attention must be directed to the position which the department aims to fill in the University as a whole. Its research activities embrace the whole field of the development and structure of the higher vertebrates and it will undoubtedly be called upon to function more and more in the training of biological students who, regardless of their interest in the structure of man, wish some familiarity with the fields of histology, neurology, and organology. It will also be important for the department to assume its obligations in the teaching of physical anthropology, for it is obvious that this can be accomplished best in conjunction with such other interests as we are supposed to nourish. At the same time the routine courses given in gross and microscopic anatomy are so influenced by the comparative viewpoint and by fundamental physiolog-

ical conceptions that we may state that the Department represents a fundamental training regardless of the future work of the student.

The poorly constructed and badly arranged wooden structure occupied temporarily as a home by the department continues to demand correction by the permanent provision which we have been long promised at the Parnassus avenue site.

Biochemistry and Pharmacology.—The year has been one of radical change of personnel and resulting reorganization of the department. The places left by the resignation of Professor T. Brailsford Robertson and Associate Professor Hardolph Wasteney were filled by the appointment of W. R. Bloor as Professor of Biochemistry and C. L. A. Schmidt as Assistant Professor of Biochemistry. Dr. C. B. Bennett, Instructor in Biochemistry, was put on a full-time basis and given charge of Pharmacology. E. S. Sundstroem, Instructor in Biochemistry, was retained as before. Miss Mary E. Hall was appointed full-time assistant. Dr. G. A. Linhart and Miss Dolores Gibson were made part-time assistants. Because of lack of available candidates one instructorship was left unfilled. The equipment of the department was found entirely inadequate for its rapidly growing activities and a special grant was made by the Regents for equipment. The sum allowed, together with savings from the departmental budget, was sufficient to afford the department a fair equipment of the more necessary apparatus and supplies. The most serious lack in the department, and one which is a great handicap to its work of research and teaching, is that of room. The building used in common by Biochemistry, Pharmacology and Physiology, was originally built for a small department of Physiology. The present Physiological Department is many times its original size, while the added department of Biochemistry and Pharmacology is now almost as large. The building which will hardly house one department in comfort, now has to accommodate two and the younger department of Biochemistry has felt the crowding more keenly. The student laboratory will accommodate thirty students, while the laboratory class for the year numbered above eighty. Of these forty-eight were crowded into this laboratory and the remaining students were housed in the Fertilizer Control Laboratory. Research students were given space in a room loaned by the Department of Pathology. The lecture room in the Physiology Building will accommodate sixty students and since the lecture group in Biochemistry numbered over 100, the lecture room in the Pathology Building was used. Space for the division of Pharmacology could not be found in the building and the course was given in entirely unsuitable surroundings in the Medical Building in San Francisco. In the present year the condition is still more serious, since with the return of Dr. F. P. Gay, Professor of Pathology, the room used for research students in the Pathology Building had to be given up.

The department has continued active in research. Dr. C. L. A. Schmidt has continued the general studies on the immunological properties of the proteins begun several years ago. Two specific subjects were studied: the antigen concerned in the production of a lysin for the red blood cell and the antigenic properties of hemoglobin. This latter work was done in conjunction with Dr. C. B. Bennett.

With Dr. F. M. Hill, studies on the absorption of ultra violet light by amino acids were carried out.

Dr. Sundstroem has continued his experimental studies of the physiological mechanism involved in the adaptation of organisms to new environment, special attention during the year being given on the one hand to those factors to which the changes of the blood in high altitudes are attributable, and on the other to the factors by which maintenance and growth of animals in the tropics are affected. For the first-named purpose a self-controlling apparatus for decreased pressure was constructed and experiments—partly in collaboration with the head of the department—carried on on animals to elucidate the physiological effect on the blood of exposures of short duration to low pressures. For the second series of experiments several hundreds of albino mice were exposed to an artificial tropical climate.

Dr. Bloor has continued his work on the metabolism of the fats with special reference to the part taken by the various phosphoric acid compounds of the blood in this process.

With Miss Mary E. L. Hall, a study was begun of the phosphoric acid compounds of the saliva in their relation to the phosphates of the food and also to similar compounds in the blood.

With Mr. E. D. Farrington, work was undertaken on the effects of severe hemorrhage on the phosphoric acid compounds of the blood with special reference to the lipemia which is one of the results of the hemorrhage.

Progress was made in the improvement of the methods for the determination of the lipoids in blood.

Medicine.—The activities of the department of medicine have necessarily been much curtailed during the past year by the absence of many members on military duty. It is gratifying to find that demobilization has restored every man to his former position, and has made available other men of promise who have been added to the staff for the coming year.

Despite the small number of available teachers, instruction of students was carried on remarkably well. The influenza situation interfered seriously with the clinical material at the service of the department. For several months medical wards at the San Francisco Hospital were closed to other cases and the number of patients at the University Hospital was greatly reduced. With the increasing number of students it becomes

more and more necessary for the proper teaching of medicine to have at least double the ward capacity now at our disposal in the University Hospital.

With the staff well organized for the work of the coming year it will be possible to coördinate teaching in the two hospitals and in the out-patient department in a way that should add greatly to the efficiency of the department. It is more and more apparent that increasing use should be made of out-patient material in teaching, and every effort should be made to secure a new out-patient building, as any further growth of the clinics is limited by the inadequate space now at our disposal.

LIST OF PUBLICATIONS, DIVISION OF MEDICINE

July 1, 1918, to June 30, 1919

Dr. W. C. Alvarez:

The cause and prevention of post-operative gas pains. *Calif. State Jour. Med.*, July, 1918, vol. 16, p. 338.

Differences in the catalase content of muscle from different parts of the stomach (*with* Miss Starkweather). *Amer. Jour. Physiol.*, July 9, 1918, vol. 47, pp. 60-66.

The catalase content of the mucous membrane from different parts of the digestive tract (*with* Miss Starkweather). *Amer. Jour. Physiol.*, July 9, 1918, vol. 47, pp. 67-75.

Differences in the action of drugs on different parts of the bowel. *Jour. Pharmacol. and Exper. Therap.*, Aug. 28, 1918, vol. 12, pp. 171-191.

The metabolic gradient underlying colonic peristalsis (*with* Miss Starkweather). *Amer. Jour. Physiol.*, Oct. 2, 1918, vol. 47, pp. 293-301.

Origin of the so-called autointoxication symptoms. *Jour. A. M. A.*, Jan. 4, 1919, vol. 72, pp. 8-13.

Dr. S. H. Hurwitz (*with* Dr. Wm. J. Kerr and Dr. G. H. Whipple):

Regeneration of blood serum proteins. I. Influence of fasting upon curve of protein regeneration following plasma depletion. *Amer. Jour. Physiol.*, 1918, vol. 47, p. 356.

Regeneration of blood serum proteins. II. Influence of diet upon curve of protein regeneration following plasma depletion. *Amer. Jour. Physiol.*, 1918, vol. 47, p. 370.

Regeneration of blood serum proteins. III. Liver injury alone; Liver injury and plasma depletion; The Eck fistula combined with plasma depletion. *Amer. Jour. Physiol.*, 1918, vol. 47, p. 379.

Dr. W. J. Kerr:

Survey of thyroid enlargement among students of the Puyallup Indian School, Tacoma, Washington, May, 1918. *Northwest Medicine*, June, 1919.

The relation of bronchopneumonia to influenza. A preliminary report. (By the Camp Lewis Pneumonia Unit.) *Jour. A. M. A.*, Jan. 25, 1919, vol. 72, pp. 268-269.

The relative frequency in recruits with and without thyroid enlargement of certain signs and symptoms which occur in neurocirculatory asthenia (*with* Dr. Thomas Addis).

Regeneration of blood serum proteins. I. Influence of fasting upon curve of protein regeneration following plasma depletion. II. Influence of diet upon curve of protein regeneration following plasma depletion. III. Liver injury alone; Liver injury and plasma depletion; The Eck fistula combined with plasma depletion (*with* Dr. S. H. Hurwitz and Dr. G. H. Whipple). *Amer. Jour. Physiol.*, vol. 47, no. 3, Dec., 1918.

Dr. E. S. Kilgore:

An evacuation system for a base hospital. *Military Surgeon*, March, 1919.

Dr. L. Langstroth:

The treatment and laboratory control of diabetes. *Calif. State Jour. Med.*, 1919, vol. 17, pp. 5-11.

Study of an unusual glycosuria. *Amer. Jour. Med. Sci.*, 1919, vol. 157, p. 201.

Notes on Folin's direct nesslerization method for the determination of nitrogen. *Jour. Biol. Chem.*, 1918, vol. 36, p. 377.

Chronic capillary cyanosis. *Arch. Internal Med.*, 1919, vol. 23, p. 56.

Dr. H. Lisser:

Lues of the epididymis without involvement of the testicle (*with* Dr. Frank Hinman). *Amer. Jour. Syphilis*, July, 1918.

The prevention of congenital syphilis by antiluetic prenatal therapy. *Calif. State Jour. Med.*, Aug., 1918, vol. 16, no. 8, p. 384.

Some clinical features of the present pandemic of influenza as compared with the pandemic of thirty years ago. Read at the annual meeting of the Calif. State Med. Soc. at Santa Barbara, April, 1919.

Dr. J. L. Whitney:

Air service medical. War Dept. A. S. D. M. C. (Govt. Printing Office, 1919), pp. 205-227, 345-359.

Medical studies in aviation. III. Cardiovascular observations. *Jour. A. M. A.*, Oct. 26, 1918, vol. 71, p. 1389.

Manual of medical research laboratory. War. Dept. A. S. D. M. C. (Govt. Printing Office, 1918), pp. 75-97, 215-229.

Obstetrics and Gynecology.—Together with the other departments in the Medical School, the work of the year was greatly hampered by the limitation of the staff, necessitated by the war and by the influenza epidemic which closed clinical work for nearly two months. Four thousand five hundred ambulatory cases were treated in the Women's Clinic; 50 women were delivered in the Maternity Service without death; while

more than 400 gynecologic operations were performed by members of the staff with two deaths. The limited number of assistants made investigative work almost impossible, yet several interesting articles were prepared based upon data obtained by a broad routine. Investigations have been continued on the toxæmias of pregnancy, X-ray study of the pelvis during pregnancy, labor and the puerperium, the results of the induction of labor, foetal deaths during a series of 2750 cases, and observations as to the use of radium in the treatment of cancer. The junior members of the staff have been fortunate in that they are permitted to work both in the hospital and the out-patient department and thus follow patients continuously through the clinic, hospital and for a considerable time after operation or other treatment.

Pediatrics.—The head of the department, Dr. William Palmer Lucas, Professor of Pediatrics, was absent on leave from July 1, 1918, to May 15, 1919. In addition to the acting head, there were six assistants, one interne for a whole year and one interne for six months, and a laboratory technician—a very much diminished staff for the work required. The influenza epidemic further contributed to the difficulties of the department.

University of California Medical School: Hospital Department. During the epidemic of October and November the children's wards were given over to the care of adult influenza patients; such children as could not be sent home were accommodated in the Children's Hospital. During the second epidemic one of our wards was assigned to adult influenza patients while the other ward accepted such sick children of the Children's Hospital as were not suffering from influenza. The coöperation of the Children's Hospital smoothed our way and made possible a great deal of medical care which, if thrown on the community, would have handicapped the local department of health.

Children's Out-Patient Department: The Children's Out-Patient Department was moved into new quarters in the Medical School Building in December, 1918. These are exceedingly commodious and fill a great need. The arrangement of the rooms is excellent and the space is now large enough to admit of considerable expansion, with increase of the clinic. The total number of patients seen in the Children's Clinic during the fiscal year was 7038; of this number 1907 were new patients.

Children's Hospital and San Francisco Hospital Departments: During the influenza epidemic the Children's Hospital was given over to the city for the care of children suffering from the disease. As medical instruction had been abandoned during the epidemic in the University Hospital, certain members of the senior and junior classes were detailed to the Children's Hospital as hospital clerks and also to the San Francisco Hospital. Aside from this no teaching was done at either hospital by this department during the year.

Affiliated Institutions: The Juvenile Court continued under our supervision, except during the influenza epidemics, when the wards of the court were placed in the hands of the Board of Health. The Nursery for Homeless Children and the Protestant Orphanage remained under our direction.

During the past fiscal year papers have been published by Drs. William Palmer Lucas, Professor of Pediatrics; E. C. Fleischner, Assistant Clinical Professor of Pediatrics; R. L. Porter, Lecturer in Pediatrics; Olga Bridgman, Instructor in Pediatrics; Florence Holsclaw, Instructor in Pediatrics; and Rachel L. Ash, Assistant Clinical Professor of Pediatrics.

With the return of Dr. Lucas and his assistants from France and the rapid return of the Medical School to the normal conditions of peace, the department with its clinical affiliations will undoubtedly reach a high standard of efficiency both for the students of medicine and the community at large.

Physiology.—With the exception of Dr. T. C. Burnett, Assistant Professor of Physiology, all members of the staff of this department have been on duty, engaged in instruction and research, during the year. Several papers are now in press.

Professor Burnett was made Post Surgeon, Students' Army Training Corps, Sec. A, October 2, 1918, and was therefore technically absent on leave until after the armistice. He resumed his duties at the opening of the spring half-year.

With the increase in the number of advanced and graduate students, the need for more room, already emphasized in previous reports, is again brought to your attention.

LOS ANGELES MEDICAL DEPARTMENT

LOS ANGELES, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit herewith the report of the Los Angeles Medical Department for the year 1918-19.

During the last year the work of this Department of the University was somewhat interfered with because of the war and the influenza epidemic. But in spite of these two factors, as many as thirty-two doctors matriculated for courses of instruction.

The large number of men on the staff who went into service made it necessary to temporize, but with it all, the work went forward in good fashion in all departments.

As noted in the last report, the hospital building of this department was in use during the war by the Aviation and also by the District Medical Examining Boards.

When the influenza epidemic came upon Los Angeles, the University of Southern California Students' Army Training Corps Unit, which had just been inducted into service, found itself with several hundred sick soldiers and no barracks or hospital in which to house them. In this emergency the Los Angeles Medical Department turned over the use of some of its buildings, and before the epidemic had been conquered a total of some five hundred soldiers had been cared for. It is gratifying to know that through this coöperation it was possible to save the lives of a number of California boys, and Col. L. M. Koehler, Commanding Officer of the Unit, in a letter of thanks for the generous aid given by the University, so expressed himself.

Now that the war is over, and many of the staff members are returning from service, there is every indication that the work of the department will again resume its normal tone and course. The opportunity which this Department presents to licensed practitioners of the healing art, for adding to their knowledge and improving their methods, and of thus being of greater service to their lay fellows, and in the conservation of the public health, has been taken advantage of by many doctors. The Department hopes to continue to be of service to the commonwealth along these lines.

Respectfully submitted,

GEORGE H. KRESS,

Dean.

CALIFORNIA COLLEGE OF PHARMACY

SAN FRANCISCO, July 1, 1919.

To the President of the University,

SIR: Owing to the war, the number of students in attendance during this college year was lessened. The increase in the proportion of women matriculants is attributable to the same cause.

Inasmuch as the sole income of the college is from fees, salaries of the faculty were reduced in order that expenses could be met.

The library is to be augmented by a generous financial donation on the part of Mr. Val Schmidt, a member of the Board of Directors.

In the latter part of May, the California Pharmaceutical Association attended a symposium on opium given by the faculty. Over one hundred were present. This association is a continuation of the California Pharmaceutical Society which founded this college.

Included in the announcement of the coming year is the honor roll of graduates and students, numbering one hundred and thirty-six.

Major Richard J. Dowdall, Instructor in First Aid and Military Hygiene, has returned from overseas and will resume his teaching during the coming year. His course will prepare the men for hospital and field service in the military arm of the government.

Three members of the graduating class of this year received the degree of Bachelor of Pharmacy, this being the first occasion on which the new degree was conferred. The establishment of standards for drugs and remedials makes it obligatory for colleges of pharmacy to meet an additional educational requirement by training the man who looks beyond a daily routine.

Respectfully submitted,

FRANK T. GREEN,
Dean.

UNIVERSITY OF CALIFORNIA PRESS

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to submit the following report of the University Press for the year 1918-19.

The work of the Press has been somewhat hampered this year by changes in personnel of the staff. In spite of this, the volume of business accomplished is substantially equal to that for 1917-18 and considerably greater than for any previous year. As will appear from the appended list of publications, seventy books and papers have been published, in addition to four issues of the *University of California Chronicle*, three syllabuses, and ten bulletins of the Lick Observatory and the Berkeley Astronomical Department—a total of 8495 printed pages. Fifteen titles have been added to the list of books published in the Semi-centennial Series:

R. G. Aitken: *The Binary Stars.*

C. E. Chapman: *Catalogue of Materials in the Archivo General de Indias for the History of the Pacific Coast and the American Southwest.*

Grinnell, Bryant and Storer: *The Game Birds of California.*

C. I. Lewis: *A Survey of Symbolic Logic.*

Members of the Department of Romanic Languages: *Literary and Philological Studies.*

B. Moses: *Spain's Declining Power in South America (1730-1806).*

Newman and Popper: *Studies in Biblical Parallelism. Part I. Parallelism in Amos. Part. II. Parallelism in Isaiah, Chapters 1-10.*

F. E. Pernot: *Electrical Phenomena in Parallel Conductors. Volume I. Elements of Transmission.*

Pernot and Woods: *Logarithms of Hyperbolic Functions to Twelve Significant Figures.*

Bacon and Rose: *The Lay of the Cid.*

R. Schevill: *The Dramatic Art of the Lope de Vega*, together with *La Damba Boba*.

R. Schevill: *Cervantes*.

Schevill y Bonilla: *Obras Completas de Miguel de Cervantes Saavedra*; *Comedias y Entremeses*. Tomo III, tomo IV.

F. J. Teggart: *The Processes of History*.

It is gratifying to note that this year shows an increase of more than two thousand dollars over any previous year in the receipts from sale of publications. The policy of systematic advertising, and the connection established last year with the University Press Association, maintaining a distributing point in New York, have contributed to this result. In this connection, it will also be noted that the largest single item of receipts, except syllabuses, is for the sale of Semicentennial publications. This series contains a number of complete volumes which would not ordinarily have been published here. The advisability of provision for publications of this class suggests itself. Volumes of other series are almost necessarily of predetermined size and format, and ordinarily include contributions from several sources. Outside of libraries and learned societies, the call is mainly for single works by one author. A policy of accepting suitable contributions for publication as separate bound volumes seems desirable from two points of view: first, it would mean the building up of a set of "list books" having a steady sale over a period of years; second, it would result in the identification with this University of a far larger portion of the scholarly production of its faculty.

The distribution of our publications was seriously affected by the war, with the result that there are large arrears of shipments to Europe which must now be made up. In addition to this, reports of non-delivery indicate that some replacements will be necessary in such shipments as have been made in the last two years. The work of the stock-room has already outgrown our present facilities, and with this added business to be considered immediately, its accommodation becomes a problem.

Indications are that the coming year will be even busier than the one just closed. Thirty contributed papers, not listed here-

with, are now in the hands of the printer, twenty-two of them already in proof. One large volume, "The Dinoflagellata of the San Diego Region—The Gymnodiniodae," by Charles A. Kofoid and Olive Swezy, has been delayed by difficulties of engraving and paper for plates; another, "Cicero of Arpinum," by Torsten Petersson, will be passed to print within the next month. In addition, there are several shorter papers already approved for publication. Work on these is proceeding satisfactorily.

Respectfully submitted,

MORSE A. CARTWRIGHT,

Manager.

C. I. LEWIS,

Assistant Manager.

SUMMARY OF PUBLICATION

SERIES	PAPERS		PAGES		PLATES	EXPENDITURES*
Agricultural Sciences.....	8		460		73	\$1,946.44
American Archaeology and Ethnology.....	7		532		55	2,246.93
Botany.....	7		93		7	489.26
Classical Philology.....	4		92			506.11
Education.....						71.75
Engineering.....	2	(3)	72	(171)	17	1,536.56
Entomology.....						71.22
Geography.....	1		8			91.42
Geology.....	4		394		33	1,551.09
History.....		(1)		(755)		2,578.37
Memoirs.....						109.05
Modern Philology.....	6	(8)	184	(604)		2,282.18
Pathology.....	2		35			183.25
Philosophy.....						30.00
			1530			
Physiology.....	2		63			285.45
Psychology.....	1		11		3	105.86
Semitic Philology.....						1,439.67
Zoology.....	11		526	2470	49	3,647.96
	—	—	—	—	—	—
	55	59	2470	4000	237	\$19,172.57
Semicentennial Publications.....	14	10	5355	3825	16	13,273.71
	—	—	—	—	—	—
	69	69	7825	7825	253	\$32,446.28
Lick Observatory Bulletins.....	10		54			
University of Calif. Chronicle....	4		527			1,112.00
Syllabus Series.....	3		89			717.75
						—
Total expended on publications.....						\$34,276.03
Advertising.....						327.51
Office Expenses, assistance, postage, supplies, etc.....						6,865.92
						—
						\$41,469.46

*"Expenditures" does not mean the cost of the particular papers enumerated here, but the money spent on the series named—in part on papers not yet published. Part of the cost of the papers published this year was paid out of funds of the year before.

RECEIPTS FROM SALES OF PUBLICATIONS, 1918-19

Agricultural Sciences.....	\$92.44	
American Archaeology and Ethnology.....	150.67	
Botany.....	70.78	
Classical Philology.....	20.01	
Economics.....	94.40	
Education.....	69.32	
Engineering.....	55.63	
Entomology.....	77.02	
Geography.....	49.30	
Geology.....	69.53	
History.....	277.30	
Mathematics.....	.37	
Memoirs.....	274.13	
Modern Philology.....	337.27	
Pathology.....	13.01	
Philosophy.....	25.51	
Physiology.....	33.83	
Psychology.....	48.22	
Seismographic Bulletin.....	.45	
Semicentennial.....	1,531.11	
Semitic Philology.....	44.58	
Zoology.....	345.44	
		\$3,680.32
University of California Chronicle.....	\$66.09	
Syllabuses.....	2,355.28	
Sundries.....	19.12	
		2,440.49
Lick Observatory Bulletins.....	2.27	
Lick Observatory Publications.....	16.87	
		19.14
Library Bulletins.....	3.25	
Publications of the Academy of Pacific Coast History....	2.24	
		5.49
†Announcement of Courses.....	18.48	
†Officers and Students Directory.....	34.00	
†University Register.....	.75	
		53.23
University Calendar.....	51.25	
English in Secondary Schools.....	1.87	
Weinstock Lectures.....	273.92	
Zoe.....	2.00	
War Record.....	.25	
State Geological Record.....	2.50	331.79
		\$6,530.46

†This does not include receipts from sales through the Recorder's Office.

SCRIPPS INSTITUTION FOR BIOLOGICAL RESEARCH

LA JOLLA, CALIFORNIA, July 1, 1919.

To the President of the University,

SIR: My report for the year July 1, 1918, to June 30, 1919, is presented herewith.

RESIDUES OF THE INSTITUTION'S WAR WORK

Some of the fruits, both in experiences and discoveries actually realized, and in prospective significance, of the Institution's war-work, deserve mention.

It can not be justly claimed that our efforts in connection with the fishing industries of southern California have had much to do in determining the magnitude and direction of the developments in this district, during the period of the war especially.

The 28 canneries, the 600 fishing boats, and the 2000 fishermen engaged in the fishing businesses of the district last season, came into being because of the general food demands of the time, and the belief by those concerned that the natural supply of fish warranted this amount of effort.

Similarly the failure, in large part, of the tuna "catch" last season (9000 tons, 1918, as compared with 17,000 tons, 1917) was due to natural and industrial circumstances inherent in the situation itself, and upon which science, at least in the present state of its hold upon the problems presented, could have very little effect.

But the activities of the Institution in connection with the industries, particularly that of Captain Crandall as Fish Administrator under the United States Food Administration, that of Mr. R. A. Coleman, as Assistant of the Federal Bureau of Fisheries, assigned to work at the Institution, and that in the domain of oceanography under the lead of Dr. McEwen, put us in possession of knowledge which should be of high value, on both the business and the scientific sides, for the future of the fishing industries. Under the first mentioned caption would come information about the fishermen themselves—their nationalities, skill, habits, methods of work, etc.; and about tolls and other charges paid by American fishermen for fishes taken in Mexican waters.

Under the second head, special mention may be made of indications bearing on the difficult but important problem of the influence which conditions of the sea have upon the movements and other habits of commercial fishes. Increased knowledge of the distribution of these fishes, especially as to relative abundance in waters off the United States and off Mexico, has been secured.

Important experiences have been had by the fishing industries in the matters of quality of product and of finding and holding markets. But the hard problems here belong primarily to the United States Bureaus of Fisheries and Chemistry, so far as science is concerned, and only in a very subordinate way can the Institution be concerned with them.

With the integrated activity of all the agencies naturally involved—the fishermen, the canners, and the fresh fish dealers; the agencies of industrial science of the Federal and state governments; and those of research in pure science appurtenant to oceanic fisheries (under which head the Scripps Institution falls)—there can be no doubt about the future importance of the fisheries of southwestern Pacific North America.

Although the kelp industry, which reached so remarkable a development under war conditions, has at present no outlook comparable with that of the fishing industry, much of interest,

scientific in any case, and economic, should future needs make it so, has been learned about the species of plant chiefly involved (*Macrocystis pyrifera*).

Dr. R. P. Brandt's two years of botanical study of it has established these facts: The plant grows most vigorously from December to March, and is practically dormant during July and August; low temperatures of the water, strong currents and brisk winds favor the development of the kelp beds; storms and heavy seas usually keep the beds thinned out during the period of most vigorous growth; the plant is subject to a bacterial disease known as black rot, the infection attacking the leaves after they reach and rest upon the surface of the water.

The life history of the individual plant has been followed in general outline, from the microscopic spore stage, to the full-sized stage having a length of fifty feet and more. The spores are mostly borne on leaves at the base of the plant, and though produced throughout the year, are chiefly liberated during the season when the plant is in most active growth. Young plants occur mainly in the spring, and are readily obtainable in abundance among the holdfasts of the old plants, where the spores and sporlings have attached themselves after their brief period of free swimming life. They reach full size and sporulation maturity within a year. The individual plant reaches a limit of growth, this being determined by the exhaustion, so to speak, of the terminal fission lamina from which alone new leaves are produced.

Dr. Brandt has devoted much time to the question of a sexual phase in the life cycle of this species, but so far has been unable to demonstrate such a phase.

The "stock," about 800, of white mice which the Institution had on hand as a result of its enterprise in supplying these animals for the medical service of the Army, became almost valueless when the war ended. However, by an arrangement with the Hooper Foundation for Medical Research, the Institution escaped with a comparatively small loss, which it gladly assumed as part of its war activities.

OCEANOGRAPHY AND MARINE BIOLOGY

The main interest and effort in this department have centered during the year in the extension of work on ocean temperatures and densities, with special reference to the bearing of information thus obtained on the problem of seasonal and "long range" weather forecasting. To extend the range of field data, arrangements have been made with local agencies for data-collecting at Pt. Arguello, Santa Barbara, Avalon, and Hueneme. One temperature observation and one water sample a day are taken at each of these points, under instructions from Dr. McEwen, the water samples being sent to the Institution once a month. In addition, the Hopkins Laboratory of Stanford University, at Pacific Grove, is, through the coöperative spirit of its director, Dr. W. K. Fisher, furnishing still more extensive data on the conditions of the sea at that point.

The suggestion that the similarity of conditions of the sea at La Jolla during the summer of 1918, to its unusual conditions of the summer of 1917, might be followed, as the 1917 summer was, by a winter of deficient rainfall, was, through coöperation with the Chamber of Commerce of San Diego, brought, by circular letter, to the attention of several hundred men of the Pacific States, who have special industrial and business interests in the amount and distribution of winter rains. Although the precipitation during the winter of 1918-19 was more ample and more favorable to crops than that of the previous winter, it was still somewhat deficient in total for the state as a whole, and its distribution was apparently somewhat abnormal. A detailed study of the year's records for the district, in meteorology and oceanography, is being made jointly by Mr. H. F. Alciatore, Government Weather Bureau forecaster at San Diego, and Dr. McEwen. Until this is completed we shall not know whether or not there was any relation between the climatic conditions of the last winter and the oceanic conditions of last summer similar to that which characterized the previous winter and summer. An Institution bulletin on the results of this study will be issued later, this to be a sort of companion to Bulletin No. 7 by Dr. McEwen, published in November, 1918.

Some progress has been made during the year on the problem of correlating oceanographic conditions with the conditions shown by the organisms which inhabit the waters. But the phenomena in this field are so complex as to be amenable to only the most extensive and exact observations. Experience and results already obtained justify the belief that if the work is continued and expanded on such lines as are now being followed, important results will come finally; first, probably, in correlating oceanic conditions with the conditions presented by the minute, free living organisms, and later with those presented by the larger animals, fishes with the rest. In this connection should be mentioned the high importance of extensive, trustworthy statistics on the "catches" of the important food fishes. It is well that the Fish and Game Commission of California is turning some of its resources and efforts in this direction. But the coöperation of the fisheries interests themselves is essential.

As indicative of the grounds for believing that important results are possible from researches in this domain, may be mentioned the seeming fact, as indicated by such cursory information as is available, that during the summer of 1918, when the temperature of the water and other oceanic and atmospheric conditions of the whole southwestern maritime district were somewhat more equatorial in character than usual, various of the fishes which visit the district in summer extended their range somewhat farther northward than usual. The plankton work of the year has been directed more specifically than heretofore upon this problem—that, namely, of the seasonal, monthly, and daily distribution of the minute floating fauna and flora, in their relation with oceanographic and meteorologic conditions.

Especially to be mentioned in this connection is the work on the diatoms by Mr. W. E. Allen. This is especially noteworthy, I say, because although this group of one-celled plants is undoubtedly the most important of all from the standpoint of the fundamental food supply of the ocean, until the last two years it has had no place in the Institution's research programme. Mr. Allen's work during the summer months of 1917 and 1918 has produced a large amount of qualitative and quan-

titative data, which, now that Mr. Allen is to become a permanent resident member of the research force of the Institution, will be extended and elaborated, and will, it is confidently anticipated, advance importantly our understanding of the seasonal cycles and interdependences of the sea and its life in this district.

Mr. Michael has continued, though with some interruptions, his work on the statistical handling of plankton data, and Dr. Esterly has added greatly to his already large accumulations of quantitative data on the copepods of the plankton.

After two years of constant, patient work on the taxonomy as well as on the seasonal distribution of the caudate tunicates, the appendiculariae, of the district, Dr. Essenberg is now coming in sight of a natural publishing place.

Such laboratory work as the director has been able to do during the year has been devoted to these animals and some almost startling observations on the propagative methods of one of the species have been partly worked out. The completion of the study is awaiting new material.

Of more than passing interest from the standpoint of the general scientific principles cardinal to the Institution under its present management, has been the publication during the year of two papers, one technical, the other general, by Dr. Esterly. The technical paper, *Reactions of Various Plankton Animals with Reference to Their Diurnal Migrations*, presents in detail the data and reasoning of the author's efforts to show how the results of field and statistical methods of studying the group of plankton animals with which he is occupied, are related to the results of laboratory experimentation on the behavior of the same organisms. The other paper, *Field Research and Laboratory Experiment: Their Places in Ascertaining and Explaining Habits in Nature* (Bull. No. 4, Scripps Institution) is a more general, semipopular discussion of the very live and practical methodological question of bringing together, or integrating, investigations of natural phenomena *in nature*, and *in the laboratory*.

HEREDITY AND ENVIRONMENTAL INFLUENCE

At no time since the investigations in this department, under the direction of Dr. Sumner, have been in progress, have the results actually in hand and almost in hand, been more varied and significant than just now. These may be enumerated in Dr. Sumner's own words:

(1) Continuation of rearing races from other sections of the state differing widely in climate. In case of the desert race, *P. maniculatus sonoriensis*, this has now reached the sixth cage-born generation, without evident change of type in the direction of the local subspecies.

(2) Measurement and statistical study of considerable collections from four new localities, making eight from which representative collections have thus far been taken. It is of interest that three collections of mice made in territory assigned to "*rubidus*" show that this "race" is not homogeneous, but undergoes gradations from north to south. On the contrary "*gambeli*" is nearly (though not wholly) uniform throughout a very wide area. Specimens from Calistoga, Napa County, resemble, on the average, those from La Jolla (500 miles distant) much more nearly than they do ones from Duncan Mills, near the mouth of the Russian River, only 27 miles away.

(3) Exact measurements continually reveal further differences between the various races and between the sexes within a race. Detailed comparisons of these races with one another, as well as the determination of coefficients of correlation within a single race make it evident that some of the differential characters have varied independently of others. On the other hand, it has become equally evident that these various distinguishing "characters" are not "unit characters" in the Mendelian sense.

(4) Hybridization experiments have been continued, and at length fairly large and fairly normal lots of first and second generation hybrids have been obtained, representing two different crosses between subspecies. My first impression that there is no demonstrable Mendelian segregation in such crosses is, on the whole, confirmed. The various characters in respect to which the subspecies differ, seem about as likely to be less variable as more variable in the second hybrid generation.

(5) The work with mutations has progressed, being now conducted jointly with Mr. Collins. One entirely new mutant (a true albino) has appeared, and experiments have been performed in crossing two of the original color mutations (yellow and pallid), with the result of obtaining typical dihybrid ratios.

(6) Work has gone far in the preparation of a report upon the results of trapping in various parts of the state, and upon the meteorological and

botanical data which have been gathered at various stations since the present project was begun.

(7) About 900 additional skeletons have been prepared from specimens comprised in the newer collections, as well as from hybrids.

(8) Experiments upon the limitations of selection, with reference to length of tail, were begun in collaboration with Mr. Collins.

(9) Experiments in feeding and care of mice were continued, with a view to eliminating abnormalities of growth and structure. Part of our earlier difficulties seem to have been thus eliminated.

(10) Experiments upon guinea-pigs, bearing upon the possible transmission of the effects of specific muscular activity, still occupy a very limited portion of our time.

In addition to the researches of this list in which Mr. H. H. Collins has collaborated, he has been occupied alone upon the following, as thesis work for the doctor's degree.

(1) On development and growth of hair; moulting and replacement of hair, natural and induced; inheritance of color differences within a single subspecies; microscopic studies of different types of hairs; analysis of color components, by means of a color-wheel.

(2) Studies of growth, by measuring and weighing immature mice at definite intervals.

SCIENTIFIC AND EDUCATIONAL MISCELLANY

The joint study of statistical methods as applied to certain types of problems in natural science, upon which Messrs. McEwen and Michael have been engaged for a number of years, has been brought to completion this year, and, with an introduction by the director, has been accepted for publication by the American Academy of Arts and Sciences.

An encouraging indication of the usefulness of attention given by members of the Institution to methods is found in the coöperation sought with them by scientists not connected with the Institution. Reference has already been made to the joint work of Dr. McEwen and Mr. Alciatore, U. S. weather forecaster at San Diego. But this has gone considerably farther than the single matter previously mentioned. Mr. Alciatore has found McEwen's methods and suggestions useful for handling some of his own particular climatological problems.

There has also been helpful coöperation in the matter of methods between investigators of the Citrus Experiment Station at Riverside, and those of the Scripps Institution.

During the year Mr. Michael's report for the U. S. National Museum on the Chaetognatha collected during the Philippine cruise of the Bureau of Fisheries steamer *Albatross*, 1907-1910, has been published. Of general and possibly practical interest in this study, the author calls attention to the evidence furnished by the animals studied by him as well as that furnished by other groups, that the pelagic fauna of the Philippine and adjacent western Pacific regions is quite different from that of the San Diego and adjacent eastern Pacific fauna, the former being predominantly equatorial, while that of the California-Mexican seas has a distinctly Arctic and Subarctic cast. The possible connection of this with the character and abundance of the fish fauna of the California region is referred to by Mr. Michael.

The educative value of the public aquarium and museum of the Institution deserves mention. More than five thousand people visited these during the year.

The entire scientific personnel of the Institution attended the Pasadena meeting of the Pacific Division, American Association for the Advancement of Science, June 19 to 22, 1919, six of the members, Messrs. Allen, Esterly, McEwen, Michael, Ritter, and Sumner having places in some of the programmes.

It is with no little satisfaction that I am able to record that members of the Institution had a rather prominent part in planning and carrying out the two symposia, one on "The Exploration of the North Pacific Ocean," the other on "Scientific Education in a Democracy," which were prominent features of the meetings.

The increasing number of calls upon the director for popular talks and writing are of such character as to indicate that his long continued teaching and preaching of the biological doctrine of "seeing life whole," is beginning to have some effect on the mind of the rank and file, as well as on that of professional scientists. His major production, so far, *The Unity of the Organ-*

ism or the Organismal Conception of Life, has come from the press, in two volumes, within the last four months.

The library has been increased by about 1000 volumes during the year, the present total being approximately 6700. Many of the additions this year were obtained from the general University Library, where they were duplicates.

A MOVE IN THE INTEREST OF THE FUTURE OF THE INSTITUTION

Through a proposal and an arrangement made by President Wheeler of the University, the Director was enabled to appear at a joint meeting of representatives of the Regents and Faculties of the University, and present a number of statements and recommendations concerning the Institution.

The following are extracts from a statement and recommendations concerning the Scripps Institution for Biological Research presented at a joint meeting of the Committees on Finance, and on Curriculum and Degrees of the Regents of the University, and representatives of the Research Board of the Academic Senate, held in San Francisco, January 14, 1919:

1. *Aim of the Presentation from the Standpoint of the State and the University of California.*—To make more effectual than it has been heretofore for the people of California, the great natural heritage of California as a maritime district.

Although California has an ocean coast line of 800 miles, or more than that of any state except Florida, and although its whole physical existence is more uniquely influenced, probably, than that of any other district in the United States by its proximity to the ocean, exceedingly little cognizance has been taken of these facts in the scientific and educational undertakings of the State.

2. *Scientific and Economic Ideas Basal to the Recommendations.*—What is presented under this head may take the form of a justification of the present tendency to substitute the phrase "Use of the Sea" for "Freedom of the Sea" in discussions of political, judicial, and economic problems of the sea.

Hitherto such discussions have regarded the sea primarily in its capacity as a highway for travel, and as an arena for warfare. To these conceptions of the use of the sea must be added, when the subject is approached from a broadly scientific standpoint, these other uses:

(a) The sea as a producer of things (food, clothing, articles of fine and industrial art, agricultural fertilizers, etc.), essential to civilized man. In restricted localities and under special conditions ocean fisheries have long received some consideration in politics and law. But growth of world population, of economic problems resulting therefrom, and of scientific and industrial knowledge is bringing to clear light the necessity of regarding the water areas of the earth, along with the land areas, as universal sources of the organic products indispensable to world civilization.

(b) The oceans as basal factors in the physical environment of peoples. Reference is specially made to the influence of the oceans on the climate, temperature, winds, water precipitation, etc., of contiguous lands.

(c) The great oceanic areas and basins as fields in which the natural and irresistible impulsion of civilized man to adventure and discovery, and to the interpretation of natural phenomena of cosmic scope. The part played by the sea in determining the psychological and philosophical types of civilization and of peoples has been too little recognized heretofore.

3. *Recommendations Concerning Scientific Exploration and Research in the North Pacific.*—(a) Concerning expansions of the present marine work of the Scripps Institution *alone*: To include pelagic or open ocean diatoms, \$6000 per year. To include the bacteriology and chemistry of the open ocean, \$5000 per year. For computers and technical assistants, \$2000 per year. These recommendations have in view investigation of the basal food supply of all marine animal life, and the measure of fertility of this oceanic area. The diatoms with other groups of microscopic plants of the surface waters play the role for the sea, generally speaking, of the grasses of the lands; while problems of bacterial life of the sea, and those of the chemistry of the water, correspond in large measure to the problems of the land as dependent on soil bacteria and humus.

Much of the research needed in these subjects is so far local that it can be carried on to good purpose by the Institution without special coöperation of other agencies. Not so with the next mentioned subject.

(b) Results of the oceanographic studies heretofore prosecuted by the Institution, reveal the importance of recognizing the California Current as the natural oceanic unit-area for the exploration of which the Institution is near the coast line center. The approximate extent of this area is from Cape Fairweather on the Oregon Coast to Cape San Lucas and Mazatlan on the Mexican coast; i.e., from about 1000 miles north of San Diego to about 600 miles south of that point. The seaward extension of the area is approximately 500 miles at the north, and 1500 to 2000 miles at the south.

Adequate exploration, physical and biological, of this area would require the constant operation of one, and for part of the time two, well appointed vessels, for a considerable term of years.

Such an enterprise is altogether too large for any agency less than the United States Government, and I recommend that the University join with

other agencies in attempting to induce the Federal Government, perhaps through a bureau of scientific research of the Navy Department, to furnish, equip, and man, vessels adequate for the investigation. But steps should also be taken through the national government to utilize lighthouses, light ships, merchant ships, and other available agencies for gathering certain kinds of data.

As already indicated, the Scripps Institution is near the coastwise center of the oceanic area which may be called the area of the California Current, and hence the Institution might well be made the operative center for the field and laboratory investigations of this area.

But of still broader scope, and to a large extent independent of this investigation, I further recommend:

(c) That the University join with other scientific organizations and agencies in an attempt to induce the United States Government to undertake exploration and research in the North Pacific generally for the purpose of extending knowledge on the following subjects particularly:

(i) The whole water circulatory system of the area, with special reference to the relation of the Japan Current to the California Current.

(ii) The meteorology of the oceanic area.

(iii) The organic productions of the oceanic area as dependent upon the basal processes in the so-called metabolism of the sea.

(iv) The animal and bird life of the oceanic area with a view to securing requisite scientific knowledge by 1926 (the date of expiration of the existing international treaty for preserving the northern fur seals and sea otters) to serve as a basis for a similar international convention for preserving and utilizing all species of these animal classes which have now or promise to have in the future, economic significance.

(v) The fishes proper of the oceanic area in such ways and to such extent as the United States Bureau of Fisheries may indicate.

4. Recommendations Concerning the Educational Functions of the Scripps Institution.

(a) Creation of the position in the scientific staff of the Institution of an educational, or public informational secretary, the chief function of which would be to make available as far as possible the results of the technical researches of the Institution, for educating the general public in the fields of science cultivated by the Institution, the chief medium for this purpose to be the public press.

5. Recommendation as to the Future Administration and Policy of Institution.—That a permanent board or committee on policy be created, this to be composed of Regents of the University and representatives from the academic side of the University. The nominally existing standing committee of the Regents of the Scripps Institution, and the present research board of the academic senate is suggested as a personnel of the new board, but both number of members and personnel of the board may be left for

later determination, the main points to be (*a*) the creating of the board; and (*b*) its containing the two elements, i.e., representatives of the administrative and the academic sides of the University.

I am able to record, with very great satisfaction, that three moves have already been made in the direction of carrying out these recommendations: (1) The Institution has been able, through increased appropriation by the State Legislature for operating expenses, and by certain readjustments of its budget, to create a new research position for the phyto plankton. (2) Recognizing the desirability of expanding the Institution's work at sea in accordance with the recommendations touching this matter, Mr. E. W. Scripps is making his large seaworthy yacht *Sanwan* available for certain phases of exploration which the Institution has never before been able to carry out. (3) Of special importance, the Regents of the University have taken a first step toward carrying out the recommendation relative to a board of policy for the Institution.

Respectfully submitted,

WM. E. RITTER,

Director.

SUMMER SESSION

BERKELEY, July 1, 1919.

To the President of the University,

SIR: Your own report for the year 1917-1918 covers so completely the ground of the 1918 Summer Session that an additional account does not seem necessary at this time. The present statement is therefore confined to a summary of the outstanding facts.

The total enrollment was 4703. Of these 3479 were registered in Berkeley, 630 in Los Angeles, and 594 in the second term of the Berkeley session. Of the 3479 registered in Berkeley in the first term, 1671 were teachers; 522 were men; 2957 were women; 2708 were Californians; 723 registered from other states, and 41 from foreign countries.

Coöperation with the University of Southern California, begun in 1917, did not satisfy the local demand, and a Southern Division of the Summer Session was instituted in Los Angeles. Six hundred and thirty students were enrolled, and the experiment must be regarded as a success.

In Los Angeles and in Berkeley, in both the first and second terms, war work of one sort or another was emphasized. Certain groups of emergency courses were continued with good results throughout the twelve weeks of the Berkeley session.

The success of the second term is worthy of especial attention, following, as it does, the success of a similar experiment in 1917, when 524 students were enrolled. In both cases plans were made late and there was little opportunity for advertising. In both cases the extra terms were self-supporting. It is highly desirable that, in 1920, ambitious students should be given a similar opportunity to make use of the University throughout the summer and thus to shorten the time required for the attainment of the bachelor's or master's degree.

Respectfully submitted,

WALTER MORRIS HART,

Dean.

WILMERDING SCHOOL OF INDUSTRIAL ARTS

SAN FRANCISCO, July 1, 1919.*To the President of the University,*

SIR: The economic and financial readjustment through which the world is now passing is of serious concern to the Wilmerding School. Our income being derived from an endowment of fixed amount, there is no way by which we can increase our revenue to keep pace with advancing cost of maintenance except by charging tuition, which the Wilmerding School Committee has always opposed, as being contrary to the spirit of the founder's bequest. Fortunately our coöperative arrangement with the Lick School makes it possible for us to meet the present and prospective financial situation by a measure of consolidation and, if necessary, by curtailment of our work, which has always been excessive in comparison with our endowments.

The original endowment of the Wilmerding School was \$400,000, with which we had to purchase a site, erect a building, install equipments, and set aside a fund sufficient to maintain the school. Our first building was a more or less temporary wooden structure which was intended to meet our needs until such time as our students might be able to construct a more substantial building for themselves. We began operations in 1900. Since then we have carried out an extensive programme of improvements, covering the entire block of land occupied by us and including a large brick school building, several large retaining walls, playground facilities, and pavements, curbs, sidewalks and iron fences on four frontages. These improvements have been paid for out of our savings and without encroaching on the principal of the productive fund that was set apart for

maintenance. In fact, between the date of Mr. Wilmerding's death and the opening of the school, the endowment had increased considerably, and it has been kept intact since we began operations, while its value has been increased to the extent of the improvements that have been added within that time.

The Lick School has an endowment of \$540,000, a block of land exactly equal to ours in size, two buildings, and equipments for pattern making, moulding, forge work, machine shop practice, machinery drafting, and industrial chemistry, besides classrooms for mathematics, science, literature, and freehand drawing. The Wilmerding School has shops for carpentry and cabinet making, plumbing and sheet metal work, stonework, electrical work, automobile work, and architectural drafting, and classrooms for elementary mathematics, science, English, and free-hand drawing.

By reducing our enrollment 15 per cent it will be possible to consolidate the work of both schools into the two Wilmerding buildings. The Lick block can then be leased and the income derived therefrom apportioned between the two schools. At the same time the cost of maintenance would be reduced by having only two buildings, instead of four, to care for. This plan of consolidation has met with the approval of the Lick Trustees and of the Wilmerding School Committee. If future conditions necessitate further economies, it may become advisable to discontinue one or two departments. A year ago we consolidated carpentry and cabinet making. Next in order we would eliminate stone work, and thereafter moulding.

During the past year 473 boys have been enrolled concurrently in the Lick and Wilmerding schools, and 227 girls in the Lick and Lux schools.

Respectfully submitted,

GEO. A. MERRILL,

Director.

DEAN OF WOMEN

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to present the following report for the year 1918-1919.

Like all other departments of the University this office was affected by the reorganization necessary to meet the needs of the Students' Army Training Corps. The task of adjusting the non-military students, especially women entering the University, fell largely upon us. Our corps of graduate and senior advisors deserve recognition for their patient and painstaking work on study schedules, and all the women students merit praise for their good will, forbearance and understanding in a difficult situation. With a return to something like normal conditions in the spring session it has been found that while some individuals have suffered in the various readjustments, the great majority of non-military students are not at a disadvantage in pursuing further work.

The untoward conditions of academic life during the past year have served to bring out clearly the need for a more comprehensive system of academic advisors. For the women such a system should offer adequate provision for advice and information in regard to vocations and the training prerequisite to entering upon them.

The women have done something for themselves in this matter in the last two years by holding vocational conferences in the spring term. The speakers at these conferences are men and women who are competent to present the various fields of activity open or opening for women in the world today. In addition to the conference, however, the student should be able

to consult an authorized academic advisor as to the choice and grouping of courses which will lead to a chosen career and at the same time secure the broader advantages of university experience. This office has carried much of this sort of advising, but as the demand increases more far-reaching and expert provision should be made.

Another unusual influence on the work of this office was the epidemic of influenza. A full report has already been rendered on the system and results of supervision of the women students during the prevalence of the disease. The results of the investigation of student boarding houses made at that time, however, will bear further emphasis.

In September, 1918, 2448 women enrolled at the University. Of these, 1000* lived in their own homes, 406† in sorority and club houses, 537† in approved boarding houses, 100* were at work in private families for room and board, and 405* were scattered at will in the community.

When the epidemic seized us it became our clear duty to be informed about the health and comfort of every student in order that medical attention and nursing care might be assured in every case which could not be met by the University Infirmary.

The living conditions of the students in their own homes cannot concern us for the purpose of this report. Students in sororities and clubs were found to be reasonably comfortable, more on account of a sense of responsibility among the members of the house than of any great advantage in the physical equipment of their houses. At least these students know what they want and how to get it. There is much room for improvement but the rudiments of comfortable, reasonable college life are found in these houses.

The living conditions of the scattered four hundred and five vary from the ease of the Berkeley Inn to the penury of house-keeping alone in a garret, with overcrowded and undesirable apartment house life between these extremes. We have always worried about this group and our anxiety is justified. We know

* These figures are based on percentages in past years.

† These figures are accurate by count this year.

their living conditions are unsatisfactory if not bad. The University has no hold upon them and has developed no adequate means of reaching them or ministering to their physical and social welfare except through the usually impracticable means of individual visitation. For the effort expended the results obtained by this method are negligible except in an emergency.

The facts revealed in regard to our approved houses give the clearest idea of where we stand in relation to the problem of housing and feeding the students of the University. The Committee on Outside Relations of the University publishes semi-annually a list of inspected and approved boarding houses for men and a list of inspected and approved boarding houses for women. These houses are the best for the purpose that Berkeley has to offer. The conditions requisite for approval by the committee are that the house is reserved for men or for women, that there is a reception room for the use of the residents, that the house is in good sanitary condition, and that it has adequate fire protection. The office of the Dean of Women is charged with a general oversight of the living conditions of the women students. Freshmen women may not register unless the houses in which they live meet with the requirements of the committee.

Under this system of approval of houses and supervision of freshmen women which has now been developing for eight years, it was hoped to secure reasonable physical comfort and good conditions of student life for the majority of students living away from their own homes. The system has been conscientiously administered. The committee has been firm in maintaining its conditions for approval. Freshmen women have been persuaded, or if necessary, compelled to meet the requirements, and this office has spared no pains in the attempt to establish friendly relations with the boarding housekeepers and to encourage student government and college spirit in its best sense among the student boarders.

With the investigation and supervision incident to the epidemic, we became keenly and uncomfortably aware of the inadequacy of this system in spite of the conscientious effort expended upon it.

First as to the physical arrangements in these houses. With two exceptions none of the approved houses were built for students. They are family houses, the best of which have been rebuilt and enlarged but the majority of which are used as they stand. Among accommodations for five hundred students there are possibly twenty single rooms. There are no studies. Toilet and bath facilities meet the minimum requirements but are in most cases inadequate both for health and comfort. It is customary for boarding housekeepers to restrict bathing facilities and the supply of hot water to the minimum of decency and to direct students to Hearst Hall for further accommodation. In more than half the houses there is no central heating plant, and where there is a central heating plant it is likely to be badly managed. These conditions exist in the best student boarding houses to be found in Berkeley. In times of illness or epidemic they become a menace. In normal times they cannot be said to furnish the best conditions of student life.

I hesitate to mention food, for it is easy to contract the habit of complaint. We are perhaps fortunate in having one boarding house from which in the course of two years there have been no complaints. This at least shows us that the problem is not insoluble.

More intangible but even more important in its effect upon the students is the general tone of the houses. While I am prepared to give unqualified praise to many of the boarding housekeepers for conscientious discharge of duty, there are few among them who can carry their financial worries and still have the interest and gift to understand and win the confidence of young women. An antagonism develops almost at once between the boarding housekeeper and the students, and is too often the only bond among the students. Each student makes a private arrangement with the boarding housekeeper. The relation is purely financial and carries with it no sense of responsibility to the housekeeper or to the other residents, much less to the University. In fact, under these circumstances the student is likely to think she pays for what she gets, often for more than she gets, and further than this there is no claim upon her. The

result is that there is no group feeling in the boarding houses. It is even impossible to maintain a quiet study hour and in time of crisis no one is responsible.

Financially, also, the approved boarding houses are wasteful and tend to increase the high cost of rather poor living for the students. In seven years the average cost per month for room and board has increased from thirty to forty-five dollars a month and in this time the food served has been reduced in quantity and variety if not in quality. Students coming from outside the state and from other colleges constantly express surprise at the high cost of living in Berkeley. This is bound to be the case so long as private amateur effort of uneven or doubtful efficiency is expected to cope with the great problem of feeding and housing our students and at the same time of eking out a livelihood for itself.

Although I have drawn my facts from my experience with the women students, I believe that much which applies to them also applies to the men. The men even less than the women make homes of their boarding places where they admittedly only eat and sleep. Boarding houses for men often do not even provide sitting rooms. It is probably not an overestimate to say that there are eight hundred homeless men attending the University. We know that there are one thousand women whose living conditions are unsatisfactory. In fact we come to the embarrassing conclusion that among the students who are not living in their own homes, those who live in fraternity and club houses come nearest to obtaining good conditions for student life, and even in such houses conditions are often questionable.

I have thought it advisable to bring these facts to your attention because my several years of work on the living conditions of the women may give my judgment some weight. I believe that every effort has been expended to make the best private resources of Berkeley available and desirable for housing and feeding the students of the University. I believe that further effort in this direction will bring no better results. By adhering to it we tend to limit the University to local service and to give undue importance to favorable prospects of membership in Greek letter

societies for the simple reason that we can not give parents and students from a distance assurance of good living conditions. I am convinced that the next step in this matter must be the assumption of greater responsibility by the University.

Respectfully submitted,

LUCY WARD STEBBINS,
Dean of Women.

CALIFORNIA MUSEUM OF VERTEBRATE ZOOLOGY*

BERKELEY, July 1, 1919.

To the President of the University,

SIR: I have the honor to present the following report of the work of the California Museum of Vertebrate Zoology for the year 1918-19.

Conditions likely to affect the work of the Museum of Vertebrate Zoology had changed appreciably by the beginning of the year just passed, even though the general plan of conduct remained the same. The volume of routine work to be done had increased, and the cost of maintenance had also risen. Fortunately, the patron of the Museum from the date of its inception, Miss Annie M. Alexander, found it possible to meet this situation, and has done so in generous measure. As a result of her manifest interest there has been nothing to hinder the accomplishment of our aims in maximum degree.

During the year now reported upon there were 163 accessions of scientific material. These comprised a total of 4537 separate specimens. The largest single accession consisted of 1148 specimens, secured by the Museum expedition working in Inyo County and in portions of the San Joaquin Valley.

The number of catalogued specimens contained in the Museum now totals 69,686. These are represented, by departments, as follows: mammals, 29,897; birds, 30,824; reptiles and amphibians, 7162; sets of birds' eggs, 1803. The collection of photographic negatives of natural history subjects numbers 2904; and there

* A list of gifts to the Museum of Vertebrate Zoology will be found on pages 179-182.

are now 58 volumes of field notes, consisting of 12,799 manuscript pages. Lantern slides for educational purposes number 774.

Thirteen separate loans, totaling 560 specimens, have been made to other institutions or individuals carrying on investigations in systematic vertebrate zoology. Our own staff has borrowed from other institutions or individuals for temporary use here approximately 1850 specimens.

Two contributions of a distinctly economic nature have appeared during the year, "The Game Birds of California," under the authorship of Dr. Grinnell, Dr. Bryant, and Mr. Storer, and the "Natural History of the Ground Squirrels of California," by Dr. Grinnell and Mr. Dixon. The first dealt exhaustively with a group of birds of importance from the standpoint not only of money value but as involving recreational stimulus to a large class of city-dwelling men. The facts were presented and the problems discussed with the purpose of pointing the way to the perpetuation of this asset, serious depletion of which is under way. The paper on the ground squirrels consisted of detailed information concerning this group of destructive rodents, together with a summation intended to help in securing improved means of control. Both contributions have been received favorably and appear already to have begun to serve usefully in the directions intended.

The return of Lieutenant Tracy I. Storer from war service has made possible the resumption by him, in collaboration with the Director, of their work upon the natural history of the Yosemite region. Mr. Swarth has concluded his systematic studies upon the avian genus *Passerella*. Mr. Dixon has finished his paper on the natural history of the bushy-tailed wood-rats, and has gathered considerable material relative to the fur-bearing mammals of California. Dr. Grinnell has finished a paper, in co-authorship with Professor Harvey Monroe Hall, on "Life Zone Indicators in California."

Besides the brochures named above, the following catch-titles of papers published during the year by Museum staff members will help further to give an idea of the lines of investigation along which we were working: bird migration in its

international bearing; extension of known distribution of some northern California birds; five new five-toed kangaroo rats from California; geographic variation in the round-tailed ground squirrel; concerning certain tendencies in systematic ornithology; notes on some Sierran chipmunks; nesting grounds and nesting habits of the spoon-billed sandpiper.

Respectfully submitted,

J. GRINNELL,

Director.

GIFTS TO THE UNIVERSITY

(GENERAL LIST)

- Allen, Irving C., Petroleum Engineer of Lower Lake, Lake County, California, to the Library of the College of Mining of an exhaustive bibliography of the technology of petroleum engineering, with a very substantial library on this subject.
- An Alumnus, \$1000 in support of the work of the University branch observatory at Santiago, Chile.
- Armes, Heirs of the late William Dallam, a very valuable collection of prints, pictures, books. Certain photographs of "Old Time Favorites" to be placed in the Bancroft Library.
- Alaska Packers Association, to the Department of Physiology, of a valuable collection of salmon eggs and fry. This collection is not only an interesting exhibit, but is useful from a scientific standpoint.
- American Red Cross, 796 pieces of linen of various kinds for the University Infirmary from the Piedmont Branch, Oakland Chapter, and by the Oakland Chapter of the American Red Cross.
- Beall, M. E., San Francisco, 23 archaeological specimens from San Juan Teotihuacan, Mexico, for the Museum of Anthropology.
- Beardsley, G. F., Cammel, California, of about 30 volumes on mining and metallurgy for the library of the College of Mining.
- Belcher, Mrs. Adeline N., \$5.40, addition to the San Francisco Girls' Union Scholarship.
- Carpentier, Horace W., New York City, \$100,000, without conditions. At the suggestion of President Emeritus Benjamin Ide Wheeler, the Regents approved a recommendation that the income of the bequest should be used by preference for the purchasing of books and other materials of instruction and research relating to the five great areas of Asiatic civilization, particularly China, Japan, India, Arabia, and Babylonia.
- Caswell, Estate of E. E., to the University Museum, of a number of valuable textiles. The collection was presented through Mrs. Phoebe A. Hearst.

Cebrian, J. C., to the University Library, of Spanish books comprising 222 volumes and pamphlets, 110 volumes of scientific and literary works, 59 volumes of literary works, a copy of the "Revista de Derecho Privado," published by Professors of Madrid University, and 114 volumes of Spanish literary and scientific works, nearly all printed in the year 1918.

Certain members of the Faculty of the College of Agriculture, \$350 for the Ralph D. Robertson Memorial Loan Fund to be used for the purpose of assisting needy students in the College of Agriculture at the University.

Churchill, Mrs. M. R., a very valuable collection of marine and fresh water shells for the Department of Palaeontology.

Class of 1919, \$2000 as a class endowment.

Crocker, Wm. H., to defray expenses of Dr. W. W. Campbell as head of the delegation representing the National Academy of Sciences, the National Research Council, and the American Astronomical Society at the meeting held in Brussels for the purpose of creating an organization to take the place of certain international scientific organizations which have been hopelessly disrupted and rendered useless by the war.

Dunshee, B. H., the gift of a handsome specimen of copper sulphate from the 400-foot level of the Silver Bow mine at Butte, Montana. Mr. Dunshee is a graduate of the University, Class of 1879, and now lives at Butte, Montana.

E. I. du Pont de Nemours Company, \$750 for a fellowship to be known as the "du Pont Fellowship," to be granted by the University to a graduate student whose major subject is chemistry.

Faucheux, Professor Gustav, of some two hundred volumes of standard books on French Philology, to the University Library.

A Friend, donation to Palaeontological Research increased from \$2400 to \$5000.

Pierce Governor Company of Anderson, Indiana, one Pierce Gas Engine Governor, so sectioned as to be of especial value as a demonstrating unit in the Automotive Laboratory of the College of Mechanics. The value of this apparatus is about \$50.

Greenewald, Otto Henry, bequest of \$20,000 for the establishment of certain scholarships.

Hearst, Mrs. Phoebe A., three paintings, two by Carl Oscar Borg, one a Pueblo scene, and the other of Upper Egypt. The third is by Jules Tavernier of the Plains Indian Encampment. A portrait of a Hopi Indian painted by Carl Oscar Borg in 1917.

Heger, W. S., Manager of the San Francisco office of the Edge Moor Iron Company to the Department of Mechanical Engineering of several blue prints, photographs, and publications giving valuable engineering data.

Joshua Hendy Iron Works, 75 Fremont Street, San Francisco, 24-inch Hendy Double-Cone Classifier, and a five-foot Callow cone complete, for the Department of Mining. The articles represent a valuation of approximately \$300.

Hindusthan Nalanda Club, \$200 for a loan fund, to be known as the "Hindusthanee Students' Foreign Scientific Education Loan Fund."

Holter, Mrs. M. E., Berkeley, California, five bound volumes of the Mining and Scientific Press, and a Treatise on Metamorphism by Van Hise.

Hooker, Mrs. Katherine, a fine old blanket from the Southwest, an Alaskan paddle, and two Fifiian clubs, for the Museum of Anthropology.

Howard, Dr. Edward J., Secretary-Treasurer of the Alumni Chapter of Xi Psi Phi, \$50 to be added to the Xi Psi Phi fund for loans to dental students.

Howard, Mrs. John L., Oakland, \$10,000 for the establishment of the Bruce Howard Memorial Fund for students in Chemistry.

Jung, Fred H., Grand Secretary of the Native Sons of the Golden West, \$1500 for the upkeep of the Native Sons Fellowship Fund.

Morley, F. H., Santa Barbara, California, several useful instruments for surveying and mineral determination and a fairly complete set of the U.S.G.S. folios and miscellaneous maps.

Moody, Mrs. R. O., to the Department of Palaeontology of a valuable collection of fresh water mussels which was made by her father, the late Professor E. W. Claypole.

Oliver, E. L., San Francisco, four exceptional exhibition specimens of rare ores to the College of Mining.

Scammell, Captain J. Marius, San Francisco, the following specimens, all from Blois, France; two Gallo-Roman bronze axes; one neolithic and five paleolithic flint specimens.

Spreckels, A. B., San Francisco, \$500 toward the University's astronomical work in Chili for the period from April 1, to September 30, 1919.

Stent, E. A., San Francisco, four exceptional exhibition specimens of rare ores, to the College of Mining.

Stephens, Henry Morse. The following is a copy of the will of Professor Stephens setting forth its conditions:

“This is the last will and testament of Henry Morse Stephens, Sather Professor of History in the University of California, written in his own handwriting and with his signature attested by two competent witnesses.

I leave all my property to the Regents of the University of California upon the following conditions.

First, that they pay to my sister, Amy Ellen Stephens, the sum of fifteen pounds sterling a month, as I have been hitherto paying, for the rest of her life;

Second, that they turn over to the Directors of the Faculty Club the furniture in my rooms there;

Third, that they place my books in the University Library;

Fourth, that they turn over to Karl Clayton Leebrick my lecture notes, card catalogues, students' essays and similar material for giving instruction in history;

Fifth, that they entrust my private papers, letters, manuscripts, and so forth to Farnham P. Griffiths, to be examined and destroyed by him or to be preserved in part, as he shall think fit;

Sixth, that they request my very dearest friends, Farnham P. Griffiths, Ralph Palmer Merritt, John Dundas Fletcher, Prentiss N. Gray, William Clark Crittenden, or any of them, to distribute among my personal friends such of my personal belongings, apart from furniture and books as they may care to possess.

I nominate William Clark Crittenden, attorney-at-law, of San Francisco to be my executor.

(Signed) H. Morse Stephens.

In the presence of
Harry B. Wilcox,
Arthur P. Watts,
Witnesses.”

Tower, Miles L., Morton, Washington, a human skull and jaw from South Dakota, which have been placed in the Anthropological Museum.

War Department, a Sturtevant Aeroplane, No. 110.

Ward, Dr. James W., \$1250 for the establishment of the Mary J. Watson M. D. Fund for Homeopathic Instruction at the University. It is the intention of Dr. Watson that the interest on this amount shall be awarded as a scholarship to a student who comes from the city of Sacramento and receives instruction in homeopathy at the University of California Medical School.

Williams, Lieutenant Donald C., San Francisco, \$125 for a scholarship. Lieutenant Williams was formerly a student at the University.

Yen, U. Y., of Washington, D. C., Chinese Education Commissioner, \$880 to be distributed among eleven Honan government students from China.

Y.W.C.A. of the University, \$500 as a fellowship for the year 1919-20, to be awarded to a graduate woman student in Social Economics.

GIFTS TO THE HERBARIUM, BOTANICAL MUSEUM, AND
BOTANICAL GARDEN

TO THE HERBARIUM

- Babcock, Professor E. B., University of California, 2 sheets of phaenogams from Branscomb, California.
- Blasdale, Professor W. C., University of California, 2 sheets of type specimens of fungi collected in California.
- Clemens, Mrs., Pacific Grove, 7 sheets of *Grindelia robusta*.
- Collins, F. S., North Eastham, Massachusetts, 20 sheets of Algae.
- Crawford, Professor D. L., Honolulu, T. H., 20 sheets of plants from southern California.
- Evans, Professor Herbert M., University of California, 260 sheets of phaenogams collected in the high Sierras.
- Ferris, Mrs. R. S., Stanford University, 3 sheets of *Chrysothamnus* collected in Arizona.
- Grant, Mrs. Adele Lewis, Columbia, California, 6 sheets of ferns collected in the Sierra Nevada Mountains.
- Hall, Professor H. M., University of California, 68 sheets of phaenogams collected in Colorado and Nevada in 1917; 70 sheets of *Chrysothamnus* for distribution in sets; and 172 miscellaneous plants collected in 1917 and 1918; 29 sheets collected in Mendocino County.
- Hooper, Mrs. H. H., 1 sheet of *Nicotiana acuminata*.
- Johnston, I. M., Upland, 9 sheets of ferns from California; 4 sheets of *Chrysothamnus* from the San Antonio Mountains.
- Jones, Professor Marcus E., Salt Lake City, Utah, 92 sheets of *Chrysothamnus* and *Haplopappus* to accompany samples of rubber plants from Utah.
- Kennedy, Professor P. B., University of California, 3 sheets of *Chrysothamnus* from Nevada.
- Kirkwood, Professor J. E., University of Montana, 3 sheets of *Chrysothamnus*.
- Parks, Harold E., San Jose, 60 sheets of *Cotyledon laxa Setchellii* Jepson from Santa Clara County.
- Minthorn, Theodore, Los Angeles, 50 sheets of plants from Arizona and Lower California.
- Nelson, James C., Salem, Oregon, 1 sheet of phaenogams from Oregon.
- Oregon, University of, through the courtesy of Professor Wm. E. Lawrence, 21 sheets of cryptograms, mostly ferns.
- Parish, S. B., San Bernardino, 5 sheets of common weeds from southern California.

- Robinson, Dr. B. L., Cambridge, Massachusetts, 3 samples of type material of *Chrysothamnus*.
- Severin, H. H., University of California, 1 sheet of *Atriplex cordulata* from Merced County.
- Smiley, Professor F. J., University of California, 6 sheets of cultivated plants from San Diego and Los Angeles, collected in 1918.
- Smith, L. S., Alturas, 26 sheets of *Chrysothamnus*.
- Tracy, J. P., Eureka, 160 sheets of plants to be mounted, and 68 duplicates for exchange from northwestern California.
- Walker, Miss Harriet A., University of California, 33 sheets of ornamentals from Golden Gate Park, 75 sheets of ornamentals from San Benito for sets and to be mounted.
- Weese, Mr. A. C., Albuquerque, New Mexico, 2 sheets of *Chrysothamnus* from New Mexico.
- Whited, Kirk, Redmond, Oregon, 5 sheets of *Chrysothamnus*.
- Yates, Dr. H. S., Bureau of Science, Manila, P. I., 107 sheets of fungi from the Philippine Islands.

TO THE BOTANICAL MUSEUM

- Coit, Professor J. E., University of California, Los Angeles, pods of *Copaiba* from Hollywood, California.
- Doherty, F. E., Calexico, specimens of volunteer cotton from the last year's roots.
- Goodspeed, Professor T. H., University of California, 9 bottles of *Caeva* in various stages of preparation, given by Mr. Charles of the Food and Drugs Laboratory, University of California.

TO THE BOTANICAL GARDEN

- Hall, Professor H. M., University of California, 12 packets of seeds of rubber plants from California and Nevada.
- Kennedy, Dr. J. P., University of California, seed of *Acacia albida* sent from Cairo, Egypt, by Mr. F. G. Walsingham, and transmitted from the Bureau of Plant Industry, Department of Agriculture; seed of *Acacia spadicigera* from Mexico.
- Parks, H. E., San Jose, 3 plants of *Sedum Setchellii* for planting in the rock garden.
- Schellenger, E. E., Riverside, 1 packet of seed of *Asclepias erosa* from the Colorado Desert.
- Tracy, J. P., Eureka, 3 packets of seed of *Compositae* from northwestern California (seed of *Hemizonia corymbosa*, *Hemizonia lazulaefolia*, *Layia gaillardiioides*).

GIFTS TO THE DEPARTMENT OF ZOOLOGY

July 1, 1918, to June 30, 1919

- Allegrini, I., San Jose, one skeleton of "Sheepshead" fish.
Camplett, F. McLean, Fort Bragg, one pathological chicken.
Hummel, L., two shells from Panama.
Richardson, Mrs. Daisy, Marchardt, Guaymas, dried seaweeds collected on Gulf shore.
Rosenfeld, Henry, San Francisco, one opossum.
Stanley, Wm. P., two eel-like fish four feet long, taken from Monterey Bay.
Zetek, James, Entomologist, Board of Health Laboratory, Panama Canal Zone, Ancon, C.Z., collection of Molluscan shells comprising forty-one species.

GIFTS TO THE CALIFORNIA MUSEUM OF VERTEBRATE
ZOOLOGY

July 1, 1918, to June 30, 1919

NOTE.—This list does not include specimens secured by collectors regularly employed from the fund provided by Miss Annie M. Alexander for the maintenance of the Museum, nor does it include a number of accessions received by purchase out of the same fund.

The term "mammal" as here used ordinarily means a dry study-skin plus the cleaned skull belonging to the same individual, not infrequently a complete skeleton, and sometimes the entire animal preserved in alcohol. A "bird" is usually a dry study-skin, sometimes a partial or complete skeleton. A "set of eggs" is the total number of eggs found in a single bird's nest, often accompanied by the nest itself. A "reptile" or "amphibian" is the entire animal preserved in alcohol.

Localities are in California unless otherwise specified.

- Alexander, Miss Annie M., 1 pair tusks of African elephant, from British East Africa; 1 slender salamander (*Batrachoseps attenuatus*), from Oakland; 26 mammals (*Rattus* and *Mus*), from Hawaiian Islands.
Allen, Mrs. A. S., 1 Nuttall sparrow (*Zonotrichia l. nuttalli*), 1 Anna hummingbird (*Calypte anna*), 1 lazuli bunting (*Passerina amoena*), nest of titmouse (*Baeolophus i. inornatus*), from Berkeley.
Bassett, F. N., 1 surf scoter (*Oidemia perspicillata*), from Alameda; 1 nest of Santa Cruz chickadee (*Penthestes r. barlowi*), from Golden Gate Park, San Francisco.

- Blake, Mrs. Anson S., 1 California quail (*Lophortyx c. californica*), from Berkeley.
- Bottcher, Miss Amelia, nest of tule wren (*Telmatodytes p. paludicola*), from near Salinas.
- Boyle, Miss Una, 1 ring-necked snake (*Diadophis amabilis*), from near San Rafael.
- Bradbury, W. C., 28 birds, from various parts of Colorado.
- Bryant, Dr. H. C., 1 skeleton of bat, from San Benito County; 2 skeletons of northern phalarope (*Lobipes lobatus*), from Maxwell, Colusa County; 3 amphibians (*Aneides*, *Batrachoseps*, *Plethodon*), from Albany, Alameda County, and San Francisco; 2 garter snakes (*Thamnophis o. atratus*), from Berkeley; 1 western ring-necked snake (*Diadophis amabilis*), from Santa Catalina Island; 2 foreign birds.
- Burk, Miss G. S., 1 mole (*Scapanus l. latimanus*), from Berkeley.
- California Fish and Game Commission, 2 ring-necked pheasants (*Phasianus torquatus*), from near Santa Clara.
- Carpenter, S. J., 1 pintail (*Dafila acuta*), from Maxwell, Colusa County.
- Carriger, H. W., 5 chestnut-backed chickadees (*Penthestes r. rufescens*), 1 Marin wren (*Thryomanes b. marinensis*), 3 ruddy wren-tits (*Chamaea f. rufula*), from Rincon Valley, Sonoma County.
- Chavis, A., 1 little brown crane (*Grus canadensis*), 1 sandhill crane (*Grus mexicana*), from Corcoran, Kings County.
- Christierson, S. V., 3 skulls of marmot (*Marmota f. flaviventer*), from Steele Swamp, Modoc County.
- Clay, C. I., 1 eastern Savannah sparrow (*Passerculus s. savanna*), from near Eureka.
- Colt, W. C., 39 sets of birds' eggs, from middle-western states.
- Cook, Dr. T. W., 1 emu egg (*Dromaeus*), from Noonbah Station, New South Wales.
- Coolidge, D., 1 kangaroo rat (*Perodipus*), from Berkeley.
- Clarke, F. C., 5 Douglas ground squirrels (*Citellus douglasii*), 1 wild cat (*Lynx californicus*), 1 deer head (*Odocoileus c. columbianus*), 1 bear skull (*Ursus americanus*), 1 mole (*Scapanus l. latimanus*), 1 white-footed mouse (*Peromyscus*), 1 screech owl (*Otus a. bendirei*), all from near Laytonville, Mendocino County.
- Crispin, C. A., 2 ruddy sheldrakes (*Casarca rutila*), from Unsankinko, Korea.
- Daniel, Prof. J. F., 1 rubber snake (*Charina bottae*), from Berkeley.
- De Groot, D. S., 1 American golden-eye (*Clangula c. americana*), 2 surf scoters (*Oidemia perspicillata*), from near Redwood City.
- Dickey, D. R., 1 Yosemite fox sparrow (*Passerella i. mariposae*), from Mammoth, Mono County; 1 slate-colored fox sparrow (*Passerella i. schistacea*), from Ojai Valley, Ventura County.

- Dixon, Miss Barbara, 1 jack rabbit (*Lepus californicus*), from Turlock.
- Dixon, J. B., 1 desert shrew (*Notiosorex crawfordi*), from near Bernardo, San Diego County.
- Duff, L. C., 3 parrots (*Barnardius zonarius*, *Platycercus eximius*, *Aprosmictus cyanopygius*), from Australia.
- Emerson, W. O., 2 opossums (*Didelphus virginiana*), from near Hayward.
- Evans, Dr. H. M., 1 yellow-legged frog (*Rana boylei*), from Alameda County.
- Ferris, G. F., 1 mole (*Scapanus l. latimanus*), from Stanford University.
- Finley, W. L., 3 wolf skulls (*Canis*), from Oregon.
- French, J. N., 6 gophers (*Thomomys b. bottae*), from Skyland, Santa Cruz County; 22 gophers (*Thomomys b. minor*), from near Point Arena; 2 gray squirrels (*Sciurus g. griseus*), 11 ground squirrels (*Citellus douglasii*), from Ukiah Valley, Mendocino County.
- Gilstrap, J. G., 1 porcupine (*Erethizon e. epixanthum*), from Montague, Siskiyou County.
- Gray, A. E., 1 ground squirrel (*Citellus douglasii*), from near Yreka.
- Grinnell, S., 1 Sitka kinglet (*Regulus c. grinnelli*), from Berkeley.
- Hagedoorn, A. L., 1 red-shafted flicker (*Colaptes c. collaris*), from Berkeley.
- Hanna, W. C., 1 worm snake (*Leptotyphlops humilis*), 1 garter snake (*Thamnophis hammondi*), 1 ring-necked snake (*Diadophis amabilis*), from near Colton.
- Haring, Prof. C. M., and Traum, Prof. J., 1 skeleton domestic goat (*Capra*).
- Heger and Harris Bird Store, 2 foreign birds (*Eos borneus* and *Garrulax pectoralis*).
- Hocking, R., 2 horned puffins (*Fratercula corniculata*), from Moss Beach and Pescadero, San Mateo County.
- Holliger, Dr. C. D., 26 Mexican free-tailed bats (*Nyctinomus mexicanus*), from Stockton.
- Howell, A. B., 33 mammals and 2 birds, from various parts of California and Arizona.
- Jacobsen, W. C., 4 ground squirrels (*Citellus douglasii* and *Citellus beecheyi*), from northeastern California; 5 gophers (*Thomomys*), from Modoc County.
- Johnson, Dr. J. C., 1 coot (*Fulica americana*).
- Kellogg, Miss Louise, 1 skull of aplodontia (*Aplodontia r. californica*), from Sequoia National Park; 2 Virginia rails (*Rallus virginianus*), 1 river otter (*Lutra c. brevipilosus*), from near Suisun, Solano County.
- Kellogg, R., 26 mammals, 6 birds, from Cote d'Or, France.

- Law, J. E., 207 reptiles and 92 amphibians, from various parts of southern California and New Mexico; 1 mole (*Scapanus l. latimanus*), from near Sespe, Ventura County; skulls and antlers of deer and elk, from Mogollon Mountains, New Mexico.
- Mailliard, J., 8 mammals and 1 reptile, from Monte Rio, Sonoma County.
- McLean, D. D., 1 harlequin duck (*Histrionicus histrionicus*), from Huckleberry Meadows, Tuolumne County; 23 birds, 2 turtles (*Clemmys marmorata*), from near Coulterville, Mariposa County.
- McQuesten, L. M., 4 white-footed mice (*Peromyscus*), from Santa Cruz Mountains.
- Miller, Miss Bernice, 37 bats (*Antrozous pacificus*), from Berkeley.
- Miller, Dr. L. H., 1 summer tanager (*Piranga r. rubra*), from Los Angeles.
- Neale, G., 1 pintail (*Dafila acuta*), from Pennington, Sutter County.
- Neville, L. S., 1 skull of grizzly bear, from Monterey County; 23 ground squirrels (*Citellus b. fisheri*, *C. b. beecheyi*, *C. t. chlorus*, *Ammospermophilus nelsoni*), from Kern, Riverside, and San Diego counties.
- Noack, H. R., 4 foreign pigeons (*Columba guinea*, *Columba leuconota*, *Phaps elegans*), 1 band-tailed pigeon (*Columba fasciata*).
- Palmer, R. H., barn owl pellets, from near Fresno.
- Plath, O. E., 1 slate-colored junco (*Junco h. hyemalis*), from Berkeley.
- Ray, M. S., 1 mole (*Scapanus l. latimanus*), from Baden, San Mateo County.
- Riley, J. H., 3 mammals, 24 birds, from Alexandria County, Virginia.
- Rupley, J., 1 mole (*Scapanus l. minusculus*), from Placerville.
- Smith, F. J., 1 horned puffin (*Fratercula corniculata*), from Eureka.
- Storer, T. I., 2 reptiles and 1 amphibian, from Texas, Arizona, and California; 5 skulls of bats (*Nyctinomus mexicanus*), from Texas; 2 gray squirrels (*Sciurus g. griseus*), from near Lagunitas, Marin County; 2 birds' nests, 2 sets of eggs, 1 bush-tit (*Psaltiriparus m. minimus*), from Berkeley and Marin County.
- Tunnell, B. J., skeleton of bullfrog (*Rana catesbeiana*), from Mexico.
- Urie, G. W., 1 hoary bat (*Nycteris cinerea*), from Ducor, Tulare County.
- United States Public Health Service, 642 heads of ground squirrels, from Contra Costa County.
- Wells, G., 14 birds, from Siskiyou County.
- Wheeler, C. S., Jr., 1 mountain lion foetus (*Felis oregonensis*), from Squaw Creek, Shasta County.
- Wilder, H. E., 2 birds (*Numenius americanus*, *Perisoreus obscurus*), 6 reptiles, from Humboldt and Trinity counties.
- Wiley, A. P., 3 mammals, 57 birds, from Shandon and Palo Verde.

LECTURES AND ADDRESSES

SUMMER SESSION, 1918

AMERICAN RED CROSS LECTURES

Stockton Axson, National Secretary of the American Red Cross:

July 22—The History of the Red Cross: How it Originated and How it Grew.

July 23—The Great War: Some of the Ethical and Psychological Blunders which Precipitated it.

July 24—The American Red Cross at Home.

July 25—The American Red Cross in Europe.

July 26—After the War—What?

J. L. Clymer, Director, Bureau of Development, American Red Cross:

June 27—The Red Cross.

A. B. C. Dohrmann, Acting Manager, General Red Cross Organization:

June 25, Aug. 1—The Red Cross.

Colonel George Filmer, Director, Bureau Military Relief:

July 11—The Red Cross.

Mrs. H. A. Kluegel, Director, Junior Red Cross:

July 30—The Junior Red Cross.

Mrs. A. L. McLeish, Director, Chapter Production:

July 2—The Red Cross.

William Popert, Associate Director, Bureau of Salvage and Shop:

July 16—The Red Cross.

Mary Wallace Weir, Director, Chapter Student Courses:

July 9—The Red Cross.

Miss Lilian White, Director, Nursing Service:

July 18—The Red Cross.

ANTHROPOLOGY LECTURES

(Delivered on Sunday afternoons at the Museum of Anthropology,
San Francisco)

Paul Radin, Instructor in Anthropology. General Subject: The Literature of Primitive Peoples.

June 30—Mythology, the Dawn of Literature.

July 7—Primitive Poetry.

July 14—The Literature of the North American Indians.

July 21—The Literature of the South Sea Islanders.

July 28—The Literature of the African Negroes.

FRENCH LECTURES

Albert J. Carnoy, Professor of Romanic Philology:

July 9—Litterature belge pendant la guerre.

July 11—L'esprit belge.

Gilbert Chinard, Professor of French:

July 30—La France en temps de guerre: L'Armie.

July 31—Alsace-Lorraine and Germany.

Aug. 1—La France en temps de guerre: Les Civiles.

Benjamin Mather Woodbridge, Assistant Professor of Romance Languages,
Rice Institute:

July 16 and 18—Les principaux caractères de la civilisation française.

HISTORY OF EMBROIDERY AND LACE LECTURES

Miss Marian Hague, Chairman, Technical Committee, Scuola d'Industrie
Italiene, New York City.

June 25—Embroidery in Antiquity.

July 2—Byzantine and Gothic Embroidery.

July 9—Needlework during the Renaissance.

July 16—The Development of Lace in the Sixteenth Century.

July 23—Lace and Needlework of the Seventeenth Century.

July 30—Work of the Eighteenth Century to Modern Times.

LEAGUE TO ENFORCE PEACE LECTURES

Willis Parker, Professor of Philosophy, Pomona College:

July 18—National Progress in War Preparation.

July 19—America's Programme for a League of Peace.

LECTURES ON BELGIUM

Albert J. Carnoy, Professor of Romanic Philology, formerly of the Univer-
sity of Louvain:

June 25—Belgium and the Belgians: The Country, the Inhabitants, the
Races, the Languages.

June 27—Belgian Literature.

July 2—The Belgian Symbolists.

July 9—Emile Verhaeren, the Poet of Democracy.

- July 11—Flemish Literature.
- July 18—Louvain in the Past and in the Present.
- July 23—Belgian Democracy.
- July 30—The German Invasion.
- Aug. 1—The Moral Victory of Belgium.

LECTURES ON THE BLIND

Miss Kate Foley, State Library Home Teacher for the Blind.

- July 1—The Psychology of the Blind.
- July 3—The Blind Child and its Development.
- July 5—The Blind Adult and his Re-education.
- July 8—The Attitude of the Public Toward the Blind.
- July 10—The Prevention of Blindness, and Conservation of Vision in Children and Adults.

LECTURES ON RUSSIA

Alexander S. Kaun, Assistant in Russian:

- July 12—The Revolution: Its Causes and Development.
- July 19—Essential Russia.

MISCELLANEOUS LECTURES

John M. Brewer, Professor of Education, State Normal School, Los Angeles:

- July 31—Vocational Guidance in the Rehabilitation of Returned Soldiers.

Maurice C. Casenave, Minister Plenipotentiary and Member of the French High Commission:

- July 15—Kultur and Civilization.

Heber D. Curtis, Astronomer at Lick Observatory, Member of the Lick Observatory Crocker Eclipse Expedition to Goldendale, Washington:

- July 15—The Recent Total Solar Eclipse.

J. M. DeBeaufort, Author of "Behind the German Veil":

- July 23—German Propaganda.
- July 24—German Ideals of Peace.
- July 25—Three Days in Flanders and France.

The Reverend John Logan Findlay, former Pastor of the Trinity Congregational Church, Cleveland, Ohio, first of four hundred Y.M.C.A. Secretaries to return from Russia:

- June 27—The Russian Revolution and its Meaning.

Herman F. Krafft, Lecturer in Naval History, United States Naval Academy:

- June 26—Slogans of Our Navy.

Lieutenant Bruno Roselli of the Italian Army, formerly Professor in Adelphi College, Brooklyn:

July 11—Italy, Your Ally.

Charles M. Schwab, Director General, U. S. Emergency Fleet Corporation:

July 7—Inspirational address at opening session of the Fourteenth Annual Convention, Associated Advertising Clubs of the World.

Albert Shiels, Superintendent of Schools, Los Angeles:

July 3—The War and the State.

Sir George Adam Smith, President and Vice-Chancellor of Aberdeen University, representing the National Committee on the Churches and the Moral Aims of the War:

June 27—Moral Aims of the War.

Justice Curtis D. Wilbur, of the Supreme Court of California:

July 26—The Juvenile Court in California.

NATIONAL SECURITY LEAGUE LECTURES

Dr. Charles R. Brown, Dean of the School of Religion of Yale University.

General Topic: The Moral Aims of the War:

July 15—The College Man and the War.

July 16—The Moral Issues in the War.

July 17—The Goal Ahead.

PROBLEMS OF THE WAR LECTURES

Ludwik Ehrlich, Lecturer in Political Science:

July 1—Public Opinion and Allied Intervention in Russia.

July 8—Expecting a Revolution in Austria-Hungary.

July 15—Relearning History.

SOCIAL MORALITY LECTURES

Dr. Mary B. Ritter, Official Lecturer of the Bureau of Social Morality Lecturers, Women's Section, Social Hygiene Division, Commission of Training Camp Activities, U. S. War Department:

July 30—Why the War Department appeals to the Womanhood and Girlhood of America for Aid in Carrying Out Physical and Moral Protection of our Army and Navy.

July 31—The Sex Principle in Nature from a Biological Viewpoint. Is a Single Standard of Morals Attainable?

Aug. 1—Existing Conditions Resulting from the Double Standard. Remedial Measures. The Government's Policy.

INTERSESSION, 1918

ANTHROPOLOGY LECTURES

Paul Louis Faye:

Aug. 4—The Primitive Feminine.

Aug. 11—The Passing Masculine.

ENGLISH LECTURES

Herbert E. Cory, Assistant Professor of English:

Aug. 5—Edmund Spenser and the Beginnings of Puritanism.

Aug. 7—John Milton's Conception of the Poet's Place in a Crisis.

Aug. 9—John Locke's Influence on Democratic Philosophy.

Aug. 12—David Hume on Progress.

Aug. 14—Adam Smith and British Liberalism.

Aug. 16—Thomas Jefferson versus "Privilege."

Aug. 19—Shelley and the Romantic Version of the Doctrine of Natural Rights.

Aug. 21—The Paradox of Thomas Carlyle: His Prussianism and His Assault on Laissez-faire.

Aug. 23—The Autobiography of John Stuart Mill.

Aug. 26—Emerson and American Optimism.

Aug. 28—Huxley and Victorian Naturalism.

Aug. 30—Walt Whitman and the New Individualism.

MISCELLANEOUS LECTURES

Countess Madeline deBryas:

Aug. 25—In Devastated France.

Arthur Farwell, President of the New York Community Chorus and President of the National League for Community Chorus:

Aug. 15—Community Music and its Significance at the Present Time.

Col. A. St. George Hamersley, M.P., of the British Heavy Artillery:

Aug. 30—The Effect of America's Entrance into the War.

Mr. Hugh Reid, representing the Education and Information Bureau of the Department of Labor, Washington, D. C.:

Sept. 10—The War Policies of the Department of Labor.

Harley R. Wiley, Attorney:

Aug. 8—The Law of Nations, War, and World Federation.

ACADEMIC YEAR, 1918-19

AMERICANIZATION LECTURES

Solomon Blum, Associate Professor of Economics:

Mar. 5—The Economics of Immigration.

Robert Hunter:

Mar. 12—Practical Problems of Americanization.

A. L. Kroeber, Associate Professor of Anthropology and Curator of the Anthropological Museum:

Mar. 19—Immigration and Race Problems.

ANTHROPOLOGY LECTURES

(Delivered on Sunday afternoons at the Museum of Anthropology,
San Francisco)

Mr. Roy Franklin Barton:

Mar. 16—The Racial Affinities of the Ifugao.

Mar. 23—How the Ifugao Live.

Mar. 30—Ifugao Warfare.

Apr. 6—Ifugao Gods and Their Relation to Daily Life.

E. W. Gifford, Associate Curator of the Museum of Anthropology:

Sept. 8—Primitive America: Food.

Sept. 15—Primitive America: Transportation.

Sept. 22—Primitive America: Textile and Ceramic Art.

Sept. 29—Primitive America: Architecture.

Oct. 6—Aboriginal America: The Eskimo, Aboriginal Inventors.

Oct. 13—Aboriginal America: The Supernatural World as Seen by the Eskimo.

Oct. 20—Aboriginal America: The British Columbian Coast as a Home of Primitive Man.

Oct. 27—Aboriginal America: Totems and Totem Poles.

Feb. 9—The Pyramids, Their Inception and Construction.

Feb. 16—The Religious Significance of the Pyramids.

Feb. 23—The Business and Daily Life of Pyramid Egypt.

Mar. 2—The Pyramid Sportsman.

Apr. 20—Fire, the Keystone of Civilization.

Apr. 27—The Domestication of Animals.

May 4—The Antiquity of Mechanical Devices.

Dr. Saxton T. Pope:

Mar. 9—Hunting Big Game with the Bow.

- O. M. Washburn, Assistant Professor of Classical Archaeology:
 Aug. 18—The Land of the Two Rivers.
 Aug. 25—Art in the Days of Abraham and the Prophets.
 Sept. 1—Ancient Ninevah and Babylon.

ART LECTURES

- Ian B. Stoughton Holborn, Professor of Art and Poetry in University
 Extension. General subject: The Arts in Education and the State:
 Oct. 30—The House and the Garden.
 Nov. 6—Pleasure Grounds and Smaller Dwellings.
 Nov. 13—Individualism and Socialism in Art and Society.
 Nov. 20—The Relation of Beauty to Goodness and Truth.
 Nov. 27—School and the Art of Education.
 Dec. 4—Anglo-Saxon Responsibility.
 Dec. 11—California's Opportunity—the University and the Beautiful.
 Dec. 18—Arts and Immortality.
 General subject: The Art of Poetry.
 Nov. 5—The Principle of Admiration.
 Nov. 7—The Search for a Standard.
 Nov. 12—The Search for a Standard Classicism and Romanticism.
 Nov. 14—Emotion in Poetry.
 Nov. 19—Classicism and Walter Savage Landor.
 Nov. 21—The Ideal in Art and Poetry.
 Nov. 26—The Transcendent or Supernal in Art and Poetry.
 Dec. 3—Dante Gabriel Rossetti.
 Dec. 5—Poetry as an Art of Sound. The Art of Reading Poetry.

COLLEGE OF COMMERCE LECTURES

- E. G. Babbitt, Manager, San Francisco Office of the Bureau of Foreign
 and Domestic Commerce:
 Apr. 10—Government Aid to Foreign Commerce.
 W. B. Brandt, Manager, Insurance Department, Kahn and Feder:
 May 1—History of Lloyd's.
 J. G. Decatur, of the Western Union Telegraph Company:
 Apr. 17—Trans-oceanic Cables.
 J. J. Dwyer, Manager, Department of Port Development, San Francisco
 Chamber of Commerce:
 Apr. 3—The Harbor of San Francisco.
 A. W. Follansbee, Jr., Marine Secretary, Fireman's Fund Insurance Com-
 pany:
 Apr. 24—Marine Insurance.
 W. D. Whittemore, International Banking Corporation:
 May 8—The Relation of Banks to Foreign Trade.

ECONOMICS LECTURES

Robert Hunter, Lecturer in Economics:

Nov. 8—The Labor Movement in Europe.

Nov. 11—The German Social Democracy—Its Strength and Weakness.

Nov. 15—The European and American Labor Movement.

Feb. 3—Meaning of the Revolutions in Europe: The Commune of 1871.

Mar. 10—Meaning of the Revolutions in Europe: The New International.

Mar. 17—Meaning of the Revolutions in Europe: National Characteristics and Organizations.

Mar. 24 and 31—Meaning of the Revolutions in Europe: The Russian Revolutions.

Apr. 7—Meaning of the Revolutions in Europe: The Significance of Bolshevism.

Apr. 21 and 28—Meaning of the Revolutions in Europe: The German Revolution.

May 5—Meaning of the Revolutions in Europe: The Trend Toward Bolshevism.

May 12—The Dualism in the Labor Movement.

May 19—Marxism on Trial.

Paul U. Kellogg, Editor of the "Survey":

Apr. 29—British Labor and Reconstruction.

EL CIRCULO HISPANICO LECTURES

Professor Enrique Molina, of the University of Chile:

Dec. 4—Rasgos Generales de la geografia e historia de Chile.

Dec. 6—La Guerra del Pacifico y la Revolucion de 1891. Sistema de gobierno parlamentario.

Dec. 9—Problemas economicos, Literatura, Educacion, Vida Social, et Porvenir.

ENGLISH DEPARTMENT LECTURES

Charles Mills Gayley, Professor of the English Language and Literature:
General subject: Books of the War and After:

Feb. 14 and 21—Ambassador Hill's "Impressions of the Kaiser."

Feb. 28—Monroe Smith's "Militarism and Statecraft."

Mar. 7 and 14—Muhlon's "The Vandal in Europe."

Mar. 21 and 28—The League of Nations.

Apr. 4—"The Higher Victory."

Apr. 11—"The Only Hope."

Apr. 18—Some Lessons of the War.

ENGLISH DEPARTMENT READINGS

Leonard Bacon, Instructor in English:

Apr. 15—Selected Poems of Swinburne.

A. G. Brodeur, Assistant Professor of English Philology:

Apr. 8—W. W. Jacobs.

Harold L. Bruce, Assistant Professor of English Composition:

Mar. 11—Bedier's *Tristan and Iseult*.

Witter Bynner, Instructor in English:

Apr. 22—The Poetry of Robert Service and Vachell Lindsay.

William Chislett, Jr., Instructor in English:

Apr. 1—The Prose of Walt Whitman and Joaquin Miller.

Charles Mills Gayley, Professor of the English Language and Literature:

Feb. 25—A Kipling Evening.

Samuel J. Hume, Assistant Professor of Dramatic Literature and Art and
Director of the Greek Theatre:

Apr. 29—Christopher Marlowe's Poetic Drama "Dr. Faustus."

W. W. Lyman, Jr., Instructor in Celtic and English:

Mar. 25—The Prose and Poetry of AE.

Thomas F. Sanford, Assistant Professor of English Literature:

Mar. 18—Poems of the War.

Chauncey W. Wells, Associate Professor of English Composition:

Mar. 4—The Poetry of John Masefield and W. W. Gibson.

GREEK DEPARTMENT LECTURES

Paul Shorey, Professor and Head of the Department of Greek in the University of Chicago, Sather Professor of Classical Literature:

Series of lectures on Greek and English Poetry, beginning Feb. 11 and continuing until May 15.

Series of lectures on Aristotle and Aristotelianism, beginning Feb. 12 and continuing until May 14.

GREEK DEPARTMENT READINGS

James T. Allen, Professor of Greek.

Nov. 7—The *Agememnon* of Aeschylus.

Nov. 14—The *Libation Bearers* of Aeschylus.

Nov. 21—The *Eumenides* of Aeschylus.

HOUSEMANAGERS' INSTITUTE

Dr. Agnes Fay Morgan, Assistant Professor of Household Science:

Mar. 18—How to Select Food.

Mrs. J. E. Wharton, Assistant Professor of Household Science:

Mar. 19—Special Needs in the College Diet.

Miss A. W. Williams, Instructor in Household Science:

Mar. 20—How to Buy Food.

MATHEMATICS LECTURES

Florian Cajori, Professor of the History of Mathematics:

Feb. 25—Medieval Methods of Computing on the Exchequer and Other Counting Boards.

Mar. 27—Early Physical Instruments and Inventions.

Apr. 8—Early Optical Instruments and Experiments.

May 13—Eighteenth Century Experiments in Electricity and Magnetism.

May 15—Origin of the Dollar Mark.

MISCELLANEOUS LECTURES

George P. Adams, Associate Professor of Philosophy:

Apr. 30—The Opportunity of America.

Raymond Blathwayt, of London, England:

Apr. 10—England and America Together.

Canon Benjamin Cabanel, formerly Chaplain of the Chasseurs Alpines (Blue Devils) of France (under auspices of Society of Friends of France):

Oct. 6—Hearts of France.

Dr. Frederick P. Gay, Professor of Pathology:

Feb. 19—Medical Lessons of the War.

F. L. Hoffman, Statistician, Prudential Life Insurance Company:

Oct. 9—Some Health Problems in California.

Baroness Huard:

Jan. 28—My Home in the Field of Honour.

Will Irwin, author, war correspondent, former Chief of Public Information:

Apr. 30—The Peace Conference and Paris.

Alexander Kaun, Assistant in Russian:

Apr. 15—Russia in Art.

Dr. P. B. Kennedy (under auspices of Annual Meeting of California Botanical Society):

Apr. 12—Flora of Nevada.

Mrs. B. G. Lathrop, President of the American Fund for French Wounded (Paris Branch):

May 29—France's Needs Through American Eyes.

Dr. O. Laurent, Member of the Academy of Medicine of Paris; Surgeon in the French Army:

Apr. 18—The Nature of the Life Principle and the Reviving of the Heart.

Major D. T. Mason, Professor of Forestry:

Mar. 25—The Work of the Forestry Regiments in France.

Major General J. F. Morrison, Commanding the Western Department:

May 21—The Reduction of Armaments—Point Four of President Wilson's Fourteen Points.

Frank H. Probert, Professor of Mining and Dean of the College of Mining:

Jan. 8—Address before Mining Association.

Lieutenant R. Renard, Member of the French High Commission:

Jan. 29—Problems of the Peace Conference and Problems of Reconstruction.

Lieutenant Colonel John Hale Stutesman, S.C., U. S. Army:

Apr. 23—The Student of Engineering, and the Signal Corps Unit of the R.O.T.C.

Rt. Rev. Henry Russell Wakefield, D.D., Major in the British Army, Bishop of Birmingham:

Nov. 7—Public address.

Albert P. Warrington, President of the Theosophical Club of America (under auspices of Theosophical Club):

May 16—New Ideals of Education.

Charles Stetson Wheeler, Regent of the University:

Mar. 22—Charter Day Address.

C. W. Woodworth, Professor of Entomology:

Mar. 31—The Educational and Industrial Needs of China.

Apr. 7—The Agriculture of Central China.

Apr. 14—Entomological Observations in China.

OFFICIAL MISSION OF FRENCH SCHOLARS TO THE UNITED STATES, LECTURES

Dr. Etienne Burnet, of the Pasteur Institute, Paris, Surgeon in the French Army:

Dec. 19—Experiences of a French Surgeon on Different Fronts.

Louis Cazamian, Professor of English Literature in the University of Paris, Lieutenant in the French Army:

Dec. 20—The France of Today and Tomorrow.

M. Seymour de Ricci, former editor of *Art in Europe*:

Dec. 18—Art in Old French Homes.

Professor Theodore Reinach, Lieutenant Colonel in the French Army, editor of the *Gazette des Beaux Arts*.

Dec. 17—Martyr Monuments of France: Rheims, Coucy, Arras.

PHILOSOPHICAL UNION LECTURES

John Dewey, Mills Lecturer in Philosophy, Professor of Philosophy in Columbia University:

Nov. 29—Philosophy and Democracy.

W. E. Hocking, Mills Lecturer in Philosophy, Professor of Philosophy in Harvard University:

Mar. 28—The Diplomacy of Suspicion and the League of Nations.

Robert Hunter, Lecturer in Economics:

Dec. 13—The Social Ideals of Tolstoi.

G. M. Stratton, Professor of Psychology:

Apr. 25—The Mind as Misrepresented to Teachers.

PHILOSOPHY LECTURES

John Dewey, Mills Lecturer in Philosophy, Professor of Philosophy in Columbia University:

- Oct. 16—Democracy.
- Oct. 18—Nationality.
- Oct. 21—Self-determination and Liberty.
- Oct. 23—Might and Right.
- Oct. 25—International Law and Justice.
- Oct. 28—International Organization.
- Oct. 30—War and Peace.
- Nov. 1—Patriotism and Humanism.

PHYSICS DEPARTMENT MEETINGS, LECTURES

R. T. Birge, Instructor in Physics:

- Apr. 3—Recent Work in Spectroscopy Bearing upon the Problem of Atomic Structure.

George M. Cunningham, C.E., ex-'18, member of the Sound Ranging Division of the Geological Survey, attached to the 29th Engineers:

- Apr. 17—How Moving Pictures of Sound Waves were Used in Locating German Guns.

Elmer E. Hall, Associate Professor of Physics:

- May 1—The Physics of the Atmosphere.

E. P. Lewis, Professor of Physics:

- Mar. 20—The Eclipse of 1918: Polarization and Spectrum of the Corona.

William J. Raymond, Associate Professor of Physics:

- Mar. 6—An Electrical Method of Evaluation of Elliptic Integrals.

PUBLIC SPEAKING DEPARTMENT READINGS

Miss Florence Lutz, Lecturer in Voice Culture:

- Feb. 5—"Cyrano de Bergerac."
- Feb. 19—An Evening of One-Act Plays.
- Mar. 5—"Mister Antonio."
- Mar. 19—"Macbeth."

ROMANIC LANGUAGES DEPARTMENT LECTURES

Ramón Jaén, Associate Professor of Spanish. General subject: Spain Since 1898:

- Mar. 5—Antecedentes; la generacion del '98.
- Mar. 12—El Teatro.
- Mar. 19—La Novela.

SIGMA XI LECTURES

W. L. Jepson, Associate Professor of Dendrology:

May 14—The Systematic Botany of Flowering Plants.

Gilbert N. Lewis, Professor of Physical Chemistry and Dean of the College of Chemistry, formerly Lieutenant Colonel, Chemical Warfare Section, U. S. Army:

Feb. 5—Gas Warfare.

DEATHS OF MEMBERS OF THE UNIVERSITY

- Allen, Harvey R., a Freshman in the College of Civil Engineering, October 26, 1918.
- Argo, William Lind, Instructor in Chemistry (Captain, Chemical Warfare Service, A.E.F.), October 17, 1918.
- Armes, William Dallam, Associate Professor of American Literature and Director of the Greek Theatre, August 18, 1918.
- Clapp, Edward Bull, Professor of the Greek Language and Literature, Emeritus, February 7, 1919.
- Coates, Kenneth Henry, a Senior in the College of Letters and Science, October 17, 1918.
- Dingley, Llewellyn A., a Freshman in the College of Agriculture, October 21, 1918.
- Drew, Alfred Augustus, a Freshman in the College of Engineering, October 21, 1918.
- Dudero, José D., a Freshman in the College of Engineering, October 20, 1918.
- Faucheux, Gustave, Associate Professor of French Literature, August 24, 1918.
- Foster, Marjorie G., Fellow in Research Medicine in the George Williams Hooper Foundation for Medical Research, January 5, 1919.
- Gunderson, Alma, a Nurse in the University Infirmary, October 17, 1918.
- Hearst, Phoebe Apperson, a Regent of the University, April 13, 1919.
- Jaén, Ramón, Associate Professor of Spanish, March 26, 1919.
- Jenks, Livingston, a Regent of the University, November 11, 1918.
- MacQueen, Helen, a Freshman in the College of Letters and Science, December 3, 1918.
- McLean, Robert Armistead, Professor of Surgery, Emeritus, December 4, 1918.
- Morris, Margie, a Freshman in the College of Letters and Science, November 7, 1918.
- Muller, Ida, a graduate student in the College of Letters and Science, October 30, 1918.

- Norton, Charlotte, a Junior in the College of Letters and Science, November 17, 1918.
- Palmer, Leon, a Flying Cadet in the School of Military Aeronautics, November 1, 1918.
- Pattee, Flores, a Sophomore in the College of Letters and Science, October 19, 1918.
- Petsch, Carl Goll, a Junior in the College of Chemistry, November 18, 1918.
- Robertson, Ralph Denny, Instructor in Agricultural Extension, January 5, 1919.
- Russell, John, a Senior in the College of Dentistry, November 8, 1918.
- Sheffield, William A., a Private in the School of Vocational Training, October 26, 1918.
- Shultz, Sidney M., a Private in the School of Vocational Training, October 27, 1918.
- Staunton, Neal, a graduate student in the School of Jurisprudence, November 30, 1918.
- Stephens, Henry Morse, Sather Professor of History, April 16, 1919.
- Stewart, Erma Pensyl, a Sophomore in the College of Letters and Science, April 1, 1919.
- Sullivan, William Ambrose, a Freshman in the College of Mechanics, November 21, 1918.
- Tabor, Dean, a Flying Cadet in the School of Military Aeronautics, November 10, 1918.
- Taylor, Ethel Elizabeth, Instructor in Textiles, October 22, 1918.
- Thayer, Eugenia, a Sophomore in the College of Letters and Science, November 18, 1918.
- Thurlwell, Vernon, a Freshman in the College of Letters and Science, November 19, 1918.
- Todresic, Leo, a Senior in the College of Letters and Science, October 27, 1918.
- Webster, Agnes Elizabeth, a Senior in the College of Letters and Science, November 17, 1918.
- Zabaldano, Alexander Nicholas, a Junior in the College of Mechanics, October 22, 1918.
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(July 1, 1918, to June 30, 1919)

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BACON, L., Instructor in English.

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BALL, K. M., Instructor in normal art.

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BIRGE, R. T., Instructor in physics.

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MEAD, C. D., Associate professor of elementary education.

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SUNDAY HALF-HOURS OF MUSIC IN THE GREEK THEATRE

BETWEEN JULY 1, 1918, AND JUNE 30, 1919

- July 14—Pacific Choral Society, under direction of Frances Thoroughman, assisted by Mr. William H. Keith, baritone.
- July 21—Miss Laura Walker, soprano; assisted by Miss Kathlyn Woolf, flutist; and Mrs. Ludwig Rosenstein, accompanist.
- July 28—Mr. Orley See, violinist; Miss Ruth Popper, accompanist.
- Sept. 29—The Antlers Band, under direction of Professor George Morris.
- Oct. 13—The Sacramento Chamber of Commerce Quartette.
- Nov. 24—Mrs. Olive Reed Cushman presenting Mrs. John Lofquist, soprano; Mrs. Thurston Janz, contralto; Mrs. Asa Henion, soprano; and Mrs. Cardinal Goodman, accompanist.
- Jan. 5—The Islam Temple Band of San Francisco, under direction of Mr. George W. Bennett; Mr. Theo. L. Wolters, manager.
- Mar. 9—Norman Smith, pianist, and Hartwell Jordan, violinist.
- Mar. 16—The Oakland Elementary Schools Orchestra—60 players, children; The Oakland Community Orchestra—60 players, adults; Mr. Glenn H. Woods, director.
- Mar. 23—Miss Mabel M. Watson, soprano.
- Mar. 30—The Sacramento Chamber of Commerce Quartette, under direction of Mr. William F. Myers.
- Apr. 6—The Choral Section of the San Francisco Musical Society, under direction of Mr. Pasmore, in composition by Mr. H. B. Pasmore; Miss Dorothy Pasmore, 'cellist, and Miss Ethel Johnson, soprano.
- Apr. 13—Miss Rebecca Haight, 'cellist; Miss Christine Howells, flutist.
- Apr. 20—Easter Service by the Grand Commandery of the Knights Templar of California, assisted by the Commanderies of the Bay District; musical numbers by the University of California Glee Club, and the De Koven Club of Berkeley; vocal solos by Miss Ruth Bowers and Mr. Clinton R. Morse.

- Apr. 27—"California," a masque of song by Professor Arthur Farwell, presented by the students of the Department of Music of the University, assisted by Miss Ruth Jensen and Miss Evelyn Murthin.
- May 4—Mills College Vested Choir; Director, Laurette B. Sweezy; Miss Evelyn Henry Stoppani, accompanist.
- May 11—Cecilia Choral Clubs of Oakland and Stockton—100 women's voices under direction of Mr. Percy A. R. Dow; soloists: Mrs. Bess Smith Ziegler, pianist, Mr. Frank Thornton Smith, baritone.
- May 18—Arthur Pendleton, in a programme of his own compositions, assisted by Miss Helen Colburn Heath, soprano, and Professor Arthur Farwell.
- May 25—University of California Orchestra and Treble Clef Society.
- June 15—The Schubert Club of Sacramento, under direction of Mr. Percy A. R. Dow.
- June 22—Mrs. J. M. Macgregor, soprano; Miss Hortense Roberts, violinist; Miss Loys Decima Williams, pianist; accompaniments played by Mr. Roscoe Warren Lucy.
- June 29—Eugenia Buyko, singer-dancer, in a Russian programme, assisted by Mr. George Edwards, composer-pianist.

UNIVERSITY MEETINGS

Sept. 30—President Benjamin Ide Wheeler.

Oct. 12—John Dewey, Ph.D., Lecturer on the Mills Foundation, Professor of Philosophy in Columbia University.

Clarence Linus Cory, M.M.E., D.Eng., Professor of Electrical Engineering and Dean of the College of Mechanics of the University.

Francis H. Dam, '96, a representative of the U. S. government, Four-Minute Man.

Music: L. W. Cook, baritone.

Oct. 26—Woods Hutchinson, M.D., physician, author and lecturer.

W. H. Brooks, Major, M.C., U.S.A., Medical Officer in Charge, University of California.

Music: Miss Florence Sherman Briggs, '21, 'cellist; Mrs. Paul Ferguson, accompanist.

Nov. 9—Roy O. Clack, Major, A.N.Z.A.C., Australian Y. M. C. A. worker with the British forces in Egypt, Gallipoli and France.

Music: Miss Florence Sherman Briggs, '21, 'cellist; Mrs. Paul Ferguson, accompanist.

Nov. 23—Frank Edwards, Captain, Royal Fusiliers.

Edward Thomas Williams, M.A., LL.D., Agassiz Professor of Oriental Languages and Literature.

Music: Mrs. M. E. Blanchard, contralto; Miss Beatrice Blanchard, accompanist.

Dec. 7—Chester Harvey Rowell, Ph.D., Regent of the University, representing the United States Food Administration.

Monsignor Arthur Stapylton Barnes, of Oxford University, England.

Music: Mrs. M. E. Blanchard, contralto; Miss Beatrice Blanchard, accompanist.

Dec. 19—Addresses by Members of the Official Mission of French Scholars to the United States: Professor Theodore Reinach, M. Seymour de Ricci, Dr. Etienne Burnet, Professor Louis Cazamian, M. Charles Koechlin.

- Jan. 24—Gilbert Newton Lewis, Ph.D., Professor of Physical Chemistry and Dean of the College of Chemistry.
 John Campbell Merriam, Ph.D., Professor of Palaeontology and Historical Geology.
 Music: Mrs. John Lofquist, soprano; Mrs. Cardinal Goodwin, accompanist.
- Feb. 7—Rev. F. W. Clappett, D.D., Pastor of Trinity Episcopal Church, San Francisco, formerly Chaplain of the 143rd Artillery.
 Joel H. Hildebrand, Ph.D., Professor of Chemistry.
- Feb. 20—Special University Meeting:
 Abbott Lawrence Lowell, LL.D., President of Harvard University.
 Henry Morgenthau, LL.D., formerly United States Ambassador to Turkey.
- Mar. 7—William E. Hocking, Ph.D., Professor of Philosophy, Harvard University; Lecturer on the Mills Foundation.
 Paul Shorey, Ph.D., LL.D., Professor of Greek, University of Chicago; Sather Professor of Classical Literature.
- Apr. 4—"The League of Nations" Meeting:
 James W. Mullen, Editor, the *Labor Clarion*.
 Will C. Woods, State Superintendent of Public Instruction.
- Apr. 25—Frank Holman Probert, A.R.S.M., Professor of Mining and Dean of the College of Mining.
 David P. Barrows, Ph.D., LL.D., Lieutenant-Colonel, U.S.A., A. E. F., Siberia, Professor of Political Science.
- May 9—Will Irwin, author and war correspondent.
- May 23—Seniors, members of the Class of 1919:
- | | |
|--------------------------------|------------------------------|
| George Atcheson, Jr., '19 | Jacob J. Posner, '19 |
| Ella Cole Barrows, '19 | James Clarence Raphael, '19 |
| Arthur Merrill Brown, Jr., '19 | Lemuel Dolton Sanderson, '19 |
| Charles L. Detoy, '19 | Clay Hanlin Sorrick, '19 |
| Frank F. Hargear, '19 | Harry Allan Sproul, '19 |
| Helene Hickman, '19 | Harold Bertram Symes, '19 |
| Erida L. Leuschner, '19 | Ruth Ware, '19 |
| Marshall W. Paxton, '19 | |
| Leslie William Irving, '20 | |

SECRETARY OF THE REGENTS
AND COMPTROLLER

UNIVERSITY OF CALIFORNIA,

BERKELEY, July 1, 1919.

To the Honorable Board of Regents

of the University of California:

GENTLEMEN: I have the honor of presenting the following report of the Secretary and Comptroller for the year ending June 30, 1919, consisting of a roster of the Board and its committees, such items selected from the minutes of the Board as are considered to be of general interest, with the exception of gifts, which are listed in the report of the President of the University, and the financial statement of the University as approved by the auditors.

Respectfully submitted,

RALPH P. MERRITT,

Secretary of the Regents and Comptroller.

REGENTS OF THE UNIVERSITY, 1918-19

REGENTS EX OFFICIO

HIS EXCELLENCY WILLIAM DENNISON STEPHENS.....	Sacramento
<i>Governor and ex officio President of the Regents</i>	
CLEMENT CALHOUN YOUNG, B.L.....	276 Post Street, San Francisco
<i>Lieutenant Governor</i>	
HENRY W. WRIGHT.....	1009 Fair Oaks, South Pasadena
<i>Speaker of the Assembly</i>	
WILL C. WOOD.....	Sacramento
<i>State Superintendent of Public Instruction</i>	
GEORGE C. ROEDING.....	Holland Building, Fresno
<i>President of the State Agricultural Society</i>	
BYRON MAUZY.....	250 Stockton Street, San Francisco
<i>President of Mechanics' Institute</i>	
BENJ. IDE WHEELER, Ph.D., LL.D., Litt.D., L.H.D.,	California Hall, Berkeley
<i>President of the University</i>	
WIGGINTON ELLIS CREED, A.B.....	593 Market Street, San Francisco
<i>President of the Alumni Association</i>	

APPOINTED REGENTS

The term of the appointed Regents is sixteen years, and terms expire March 1 of the year indicated. The names are arranged in the order of original accession to the Board.

*Mrs. PHOEBE APPERSON HEARST.....	1930
Pleasanton. Business address: 410 Hearst Building, San Francisco	
ARTHUR WILLIAM FOSTER, Esq.....	1932
226 Southern Pacific Building, San Francisco	
GARRETT WILLIAM MCENERNEY, Esq.....	1920
2002 Hobart Building, San Francisco	
GUY CHAFFEE EARL, A.B.....	1934
14 Sansome Street, San Francisco	
RUDOLPH JULIUS TAUSSIG, Esq.....	1932
1521 Van Ness Avenue, San Francisco	
†JAMES WILFRED MCKINLEY, B.S.....	1922
706 Security Building, Los Angeles	
JOHN ALEXANDER BRITTON, Esq.....	1930
445 Sutter Street, San Francisco	
CHARLES STETSON WHEELER, B.L.....	1928
Nevada Bank Building, San Francisco	
WILLIAM HENRY CROCKER, Ph.B.....	1924
Crocker National Bank, San Francisco	

* Died April 13, 1919.

† Died May 11, 1918.

PHILIP ERNEST BOWLES, Ph.B.....	1922
American National Bank, San Francisco	
JAMES KENNEDY MOFFITT, B.S.....	1924
First National Bank, San Francisco	
Rev. CHARLES ADOLPH RAMM, B.S., M.A., S.R.B.....	1928
1100 Franklin Street, San Francisco	
JAMES MILLS, Esq.....	1926
Hamilton City, California	
CHESTER HARVEY ROWELL, Ph.B.....	1920
Fresno, California	
EDWARD AUGUSTUS DICKSON, B.L.....	1926
637 Wilton Place, Los Angeles	
GEORGE I. COCHRAN, LL.D. (vice Mrs. Phoebe A. Hearst).....	1930
501 West Sixth Street, Los Angeles	
Mrs. MARGARET SARTORI (vice J. W. McKinley).....	1922
725 West Twenty-eighth Street, Los Angeles	
MORTIMER FLEISHHACKER, Esq.....	1934
Anglo-California Trust Company, San Francisco	

OFFICERS OF THE REGENTS

HIS EXCELLENCY WILLIAM DENNISON STEPHENS.....	Sacramento
<i>President</i>	
RALPH PALMER MERRITT, LL.D.....	220 California Hall, Berkeley
<i>Comptroller and Secretary</i>	
ROBERT G. SPROUL, B.S.....	220 California Hall, Berkeley
<i>Assistant Comptroller and Assistant Secretary</i>	
MORTIMER FLEISHHACKER.....	Anglo-California Trust Company, San Francisco
<i>Treasurer</i>	
J. M. MANNON, Jr., LL.B.....	Merchants Exchange Building, San Francisco
<i>Counsel</i>	

STANDING COMMITTEES OF THE REGENTS FOR 1918-19*

Finance: Regents Earl, Foster, Britton, Moffitt, and Taussig.

Grounds and Buildings: Regents Britton, Bowles, Mrs. Hearst and C. S. Wheeler.

Agriculture: Regents Foster, Roeding, Dickson, Mills (Regent Bowles, alternate).

Medical Instruction: Regents Moffitt, Crocker, Ramm, Dickson, and Taussig.

University Hospital: Regents Crocker, Taussig, Britton, Earl and Moffitt.

Curriculum and Degrees: Regents Rowell, Moffitt, and Bowles.

Lick Observatory: Regents Ramm, McEnerney, Young, and Crocker.

Wilmerding School: Regents Taussig, Earl, and Moffitt.

Scripps Institution for Biological Research: Regents Dickson, McKinley.

Executive Committee: This committee consists of the chairmen of all the other committees.

* The President of the Board of Regents and the President of the University are ex-officio members of all committees of the Board. In each committee the name of the chairman appears first and the name of the vice-chairman second.

SPECIAL COMMITTEE OF THE REGENTS DURING 1918-19*

Committee on Committees for 1919-20: Regents Earl, Britton, Dickson, Moffitt, and Taussig.

STANDING COMMITTEES OF THE REGENTS FOR 1919-20*

Finance: Regents Earl, Foster, Britton, Moffitt, and Taussig.

Grounds and Buildings: Regents Britton, C. S. Wheeler, Bowles, Dickson, and Fleishhacker.

Agriculture: Regents Foster, Roeding, Bowles, Mills, and Cochran.

Medical Instruction and University Hospital: Regents Crocker, Taussig, Britton, Earl, Moffitt, Ramm, and Mrs. Sartori.

Curriculum and Degrees: Regents Rowell, Moffitt, Ramm, Wood, and Creed.

Lick Observatory: Regents Ramm, McEnerney, Young, Crocker, and Wright.

Wilmerding School: Regents Taussig, Earl, and Moffitt.

Southern Branch of the University of California and Scripps Institution for Biological Research: Regents Dickson, Cochran, Creed, Sartori, Wood, Rowell, and Taussig.

Library: Regents Moffitt, Mauzy, Bowles, Wheeler, and Mills.

Endowments: Regents Crocker, Britton, Mrs. Sartori, Bowles, Cochran, McEnerney, and Fleishhacker.

Executive Committee: This committee consists of the chairmen of all the other committees and the President of the Alumni Association.

AUGUST, 1918

School for Vocational Training:

The Comptroller was authorized to enter into a contract with the United States Government for a School of Vocational Training for enlisted men, the school to enroll approximately 100 men and to be in operation from July 1 to September 1.

Alterations in Medical Group Buildings:

An appropriation of \$10,000 was made for alterations in the central buildings of the medical group on the Parnassus Avenue Campus in San Francisco.

Hooper Foundation Budget:

A budget for the Hooper Foundation was approved, amounting to \$43,000—\$22,700 for salaries and \$20,300 for maintenance.

* The President of the Board of Regents and the President of the University are ex-officio members of all committees of the Board. In each committee the name of the chairman appears first and the name of the vice-chairman second.

Reconstruction Work for Wounded Soldiers:

An appropriation of \$500 was made for a complete set of reconstruction apparatus for use in the training of reconstruction aides and teachers of vocational training for wounded soldiers, this work to be done largely under the direction of Dr. Elsie Blanchard, Assistant Professor of Physical Education for Women.

Paving of Bancroft Way:

The Assistant Comptroller was authorized to enter into a contract for the paving of Bancroft Way in the City of Berkeley and of the road west of Hilgard Hall on the campus.

Loyalty Pledges from the Faculty:

On the recommendation of President Wheeler and the Advisory Committee of Deans it was voted to require pledges of loyalty to the United States Government from all members of the University faculty.

SEPTEMBER, 1918

Death of William Dallam Armes:

President Wheeler reported the death of William Dallam Armes, Associate Professor of American Literature, on Sunday, August 18, at 5 p.m. at the Faculty Club.

Student Army Training Corps:

President Wheeler reported on the developments in the matter of the Student Army Training Corps, and the Assistant Comptroller presented a plan for the housing and feeding of the members of that organization. It was voted, on the recommendation of the Finance Committee and the chairman of the Committee on Grounds and Buildings, to authorize the Assistant Comptroller, in conference with the chairman of the Committee on Grounds and Buildings and the President, to enter into a contract for the construction of barracks, mess hall, administration building and other necessary structures for 3500 or more members of the Student Army Training Corps, at an estimated cost of \$200,000.

Bunnell Property Offered for Military Purposes:

An offer of George W. Bunnell to place at the disposal of the Regents for the period of the war for military purposes, his property in Berkeley, bounded by Grove, Channing, Milvia, and Bancroft Way, rent free, was accepted with thanks.

Southern California Summer Session:

It was voted to hold a Summer Session in Los Angeles during the year 1919.

Medical Care of United States Employees:

On recommendation of the University Hospital Committee, the action of the Superintendent of the University Hospital was approved and confirmed, in having entered into an agreement between the University Hospital and the United States Employees Compensation Commission, covering medical attention to civil employees of the United States injured in the performance of their duties. Under this agreement all such employees from the western district are to be sent to the University of California Hospital and are to receive treatment at the rate covered by the following schedule of charges:

1. Hospital service in general ward, including (1) subsistence, nursing, necessary medicines, dressings, laboratory examinations (2) when necessary, X-ray examinations and the use of the operating room, and (3) the furnishing of copies or abstracts of case records when desired by the Commission\$3.50 per day
- 1A. Hospital service in the general ward does not include expert anesthetist and anesthesia, for which an additional charge of \$10 will be made.
2. Medical and surgical treatment for hospital patients.....\$1.00 per day
With additional charge of \$10 for minor operations and \$25 professional fee for major operations. This treatment to be furnished by visiting staff of department concerned.
3. Out-patient or dispensary treatment, including all necessary medicines and dressings\$2.00 per visit
4. Medical and surgical treatment for dispensary or out-patients. This treatment will be furnished by members of the visiting staff. Extra charges will be made for extra medicines, like salvarsan and such special treatments as cystoscopy and similar special services.

Appointment of Advisor to County Institutions

Committee of Alameda County

On the recommendation of the University Hospital Committee, Dr. W. E. Musgrave was appointed as advisor on the construction of a new hospital for the Public Health Center, which is to be operated by the County Institutions Committee of Alameda County.

OCTOBER, 1918

Publication of "The Breakdown of Spanish Rule in South America":

A contract between the Regents and Professor Bernard Moses for the publication of his book, "The Breakdown of Spanish Rule in South America" was approved; the Regents agreeing to purchase 250 copies

for the Semicentennial Series, and to act as agents in the publication and distribution of the books, through the University Press; and receiving therefor a commission of 20 per cent of the retail price of each copy sold, less the cost of delivery to the purchaser. The Regents assume no financial responsibility, all costs being met by the author. The edition is to consist of 750 copies.

Employment Management Course:

An appropriation of \$1000 was approved for the expenses in connection with a course in employment management under the direction of Professor Ira B. Cross of the Department of Economics.

Appropriation for War Emergency Courses:

An appropriation of \$18,750 was made for non-military war emergency courses as follows:

1. Courses for Credit in Schools of Nursing.
2. Training for Reconstruction Aides.
3. Training for Teachers of Occupational Therapy.
4. Training for Social Workers.
5. Training for Statistical Clerks.
6. Training for Employment Managers.
7. Training for Americanization Aides.
8. Training for Psychiatric Social Workers.

Animal Experimentation.

On recommendation of the University Hospital Committee it was voted that, in order to remove all reasonable grounds for criticism regarding abuse or misuse of animals in various experimental laboratories of the University, which is occasionally called to the attention of the Regents from outside sources, the Hospital Committee be officially designated as an inspection committee for all University laboratories using animals for experimental purposes, and that it be the duty of this committee to make periodical inspection of these laboratories and to take cognizance of any criticism which may be referred to them.

Removal of the Department of Morphological Pathology to San Francisco:

On recommendation of the Committee on Medical Instruction it was voted that the Department of Morphological Pathology be moved from Berkeley to San Francisco at a cost amounting to approximately \$500, to be paid from funds appropriated to the Medical School.

NOVEMBER, 1918

University Farm Sheep Project:

On recommendation of the Committee on Agriculture, it was voted to make an advance of \$15,000 to the College of Agriculture for the purpose of purchasing ewes that are too old to be continued on the ranges and placing them in small flocks in valley farms, the money to be used as a revolving fund between August 1 and December 1 and to be returned not later than the latter date. The College of Agriculture is undertaking this project in the interest of mutton and wool production in California, and will purchase large bands of sheep and resell them to farmers in small flocks.

Volunteer Student Service of the United States Food Administration:

The sum of \$600 was appropriated in order to maintain the Volunteer Student Service of the United States Food Administration.

Plan of Hospital Organization:

The following plan of hospital organization was approved, to be adopted upon the taking over of the Hahnemann Hospital by the University of California:

1. That the University establish a department to be known as the University of California Hospitals, for administrative purposes, and as the Department of Administrative Medicine, for teaching purposes.

2. The department shall be operated, administratively, under direction of the Hospital Committee of the Regents, as the University of California Hospital now is operated, and for teaching purposes as a department of the School of Medicine.

3. The administrative officer shall be the Director of Hospitals, responsible to the Comptroller and the Regents' Committee in business matters and for teaching purposes as Chief of the Department of Administrative Medicine in the School of Medicine.

4. The general policy and regulations now governing the management of the University of California Hospitals are hereby extended and made applicable to all officers, employees and branches of the Department of Hospitals, in so far as feasible and practicable.

5. The University of California Hospital shall be the central hospital in the department, the main office of the Director of Hospitals, and all other hospitals shall be operated from that office.

DECEMBER, 1918

University Calendar:

It was voted to approve the following recommendation of the Academic Senate with reference to the Calendar of the University: That the program of University instruction for the remainder of the current Univer-

sity year be so planned as to complete the work of the year at the end of the spring semester of 1919, and that plans for the completion of the year's work in certain undergraduate curricula April 1, 1919, approximately, be abandoned, provided this action be taken without prejudice to further discussion of the University Calendar for the period following Commencement, 1920.

Deaths:

The President reported with regret the following deaths:

Robert Armistead McLean, Professor of Surgery, Emeritus (December 4, 1918, in Berkeley).

Livingston Jenks, a Regent of the University (November 11, 1918, in Placer County).

William L. Argo, Instructor in Chemistry, on war leave (October 17, 1918, in France).

Erection of Residence for Nurses:

The action of the Finance Committee was approved and confirmed, in having authorized the execution of a contract between the Regents and MacDonald & Kahn for the erection of a residence for nurses at the University Hospital, and of a mortgage of \$75,000 to the same parties upon the following terms: The lease to run twenty years from the time of completion of the building with a rental of \$1250 per month, the Regents to have an option to purchase at \$165,000 within the first ten years of the lease, or \$145,000 within the next seven and one-half years, or for \$120,000 during the last two and one-half years of the term.

JANUARY, 1919

Deaths:

The President reported with regret the following deaths:

Ralph Denny Robinson, Instructor in Agricultural Extension (January 6, 1919, in Stockton).

Marjorie G. Foster, Fellow in Research in the George W. Hooper Foundation for Medical Research (January 5, 1919, in Baltimore).

Lease to M. A. Ley:

On recommendation of the Finance Committee a lease on the following land to M. A. Ley was authorized for two years beginning January 1, 1919, at the rate of \$100 per year: The southwest quarter; the southeast quarter of the northwest quarter; the southwest quarter of the northeast quarter; all in section nine (9), township 14 south, range twenty-five (25) east, M. D. M., containing two hundred and forty (240) acres more or less.

Contract for Instruction of Returning Wounded Soldiers:

A contract with the Federal Board for Vocational Education (Rehabilitation Division) for the instruction of returning wounded soldiers on the same financial basis as regular students of the University, was approved.

Removal of Military Buildings:

The removal of the barracks, mess hall and laboratory buildings erected for the Student Army Training Corps and School of Military Aeronautics was authorized at the earliest possible date.

Public Health Center of Alameda County:

It was voted to grant the request of the Public Health Center of Alameda County for the appointment of an Advisory Committee in connection with all questions affecting the work of the center, on the specific understanding that the Regents might withdraw from the arrangement at any time, and that no financial responsibility should be involved.

FEBRUARY, 1919

Introduction of Regent Creed:

Mr. W. E. Creed, who as President of the California Alumni Association is ex officio a Regent, under the constitutional amendment recently passed by the voters of the State, took his place on the Board at this meeting.

Death of Professor E. B. Clapp:

The President reported with regret the death in Berkeley on February 7, 1919, of Edward Bull Clapp, Professor of Greek Language and Literature, Emeritus.

Resignation of President Wheeler:

President Wheeler presented the following letter:

“To the Regents of the University of California:

My dear Associates and Friends:

On the fifteenth of July next I shall not only have reached the usual age of retirement, but shall have also completed approximately twenty years of service in the University of California:

These have been years of abundant opportunity and of much plain satisfaction, but with the growth and expansion of the University they have involved heavy burdens and fast-shifting solitudes. The coming days promise only heavier burdens and levy their demands for increasing vigor. I appreciate with all my heart the unvarying confidence you and your predecessors have reposed in me and the sturdy support you have always

given me. No one understands better than I do myself the inadequacy of any service I have been able to render, but I have honestly done my best. I am sure therefore that I shall not be esteemed to be quitting my task, if I ask you now to give me your blessing, and let me go.

This is my resignation of the Presidency, to take effect on the above mentioned date.

In devoted loyalty to the University, I am

Ever faithfully yours,

(Signed) BENJ. IDE WHEELER."

On motion of Regent Britton, it was resolved that the resignation of the President be accepted with regret, and with the testimony of the Board to the splendid service which he had rendered the University in twenty years of unselfish devotion, and it was further resolved that it is the desire of the Board that by said resignation the connection of the President with the University be not severed, and that for the accomplishment of this desire, the Executive Committee be, and it is hereby requested to consider in conference with the President the character of his future services to the University and to report to the Board.

Nominations of Candidates for Presidency:

It was voted that the Executive Committee be authorized to consider and present to the Board the names of candidates for the Presidency of the University, and that expenditures for traveling expenses in this connection be authorized.

Appreciation of James Burke's Services:

The Finance Committee reported that Lamberson, Burke & Lamberson, and particularly Mr. James Burke, had defended the case involving the Whitaker Forest in Tulare County successfully without charge to the Regents, because of Mr. Burke's regard for the University of which he is an alumnus. The Board passed a resolution expressing the appreciation of the Regents for Mr. Burke's action.

Contract for Wrecking Military Buildings:

The awarding of a contract for wrecking the buildings of the Student Army Training Corps and the School of Military Aeronautics, with the exception of the Radio Building, to the Simon Bros. Wrecking Co., the highest bidder, at \$21,656.50, was approved.

Deed to Lot in Claremont Court, Berkeley:

The action of the President and the Secretary of the Board was approved and confirmed in having executed a deed to Mary T. Lykins for certain property donated to the University by Whitney Palache as an endowment for a bed in the University Hospital in memory of Belle G. Garber and Joseph B. Garber. The sale of this property is in accord-

ance with the wishes of Mr. Palache, who stated in the letter which accompanied his gift that he wished the endowment to amount to \$10,000 and was willing to leave in the hands of the Regents, without reserve, the sale of the property if a favorable opportunity should offer.

Hahnemann Hospital:

The execution of the following agreement with the trustees of the Hahnemann Hospital was approved:

“This agreement, made this 31st day of December, 1918, by and between the Hahnemann Hospital, a corporation of the State of California, hereinafter called the Hospital Corporation, party of the first part, and The Regents of the University of California, a corporation of the State of California, hereinafter called The Regents, party of the second part, witnesseth:

Whereas the Hospital Corporation is a corporation, not for profit, organized under Title XII, Part 4, of the Civil Code of the State of California, and is engaged in conducting a hospital in the City and County of San Francisco, known as the ‘Hahnemann Hospital,’ and it is thought that it will best subserve the benevolent purpose for which it was organized and for which the said hospital is conducted if the hospital, together with all the property of the Hospital Corporation, is transferred to The Regents, to be thereafter conducted by the latter;

Now, therefore, it is agreed: That the Hospital Corporation shall transfer and convey to The Regents all of its property and assets of every nature and description, securing such legal authorization for such transfer and conveyance as may be required, and The Regents shall accept the same, upon the following terms:

1. The Regents shall assume and pay all the liabilities of the Hospital Corporation, but such liabilities are guaranteed by the Hospital Corporation not to exceed the sum of fifty thousand (\$50,000) dollars.
2. The Regents shall continue the hospital, maintaining and supporting the same in a suitable manner, and under the name of ‘The Hahnemann Hospital of the University of California,’ and it shall be so designated in the catalogue of the University of California and in other publications of the University. Such name shall also appear upon the front of the building now or hereafter used for such hospital.
3. The hospital shall be conducted without discrimination of any kind or nature against homeopathic physicians, patients, practice, or treatment.
4. Suitable and adequate instruction covering the principles of homeopathy and homeopathic pharmacology, symptom recognition and recording, shall be given as a part of their curriculum to such nurses of the hospital training school as may apply for the same, it being understood that in general a minimum of twelve (12) one-hour periods yearly of such instruction are deemed adequate. There shall be no discrimination of any nature against nurses so applying and no discouragement of any kind against the making of such applications.
5. Internes trained in homeopathic methods, provided such internes are available and competent, will be provided in number suitable in proportion to the average number from time to time of patients in the hospital receiving treatment according to homeopathic practice.
6. Among the assets of the Hospital Corporation is an endowment in the principal sum of five thousand (5000) dollars for a bed for sick

children, such endowment being known as the 'Emily Louise Shaw Bed.' The Regents shall take over said endowment as a part of the assets of the Hospital Corporation and shall perform and carry out the trust upon which it was created, and the bed so maintained shall always be suitably marked by a bed plate in the manner in which the same is now marked.

7. The Regents agree to encourage the making of and to accept endowments for the hospital and for beds in the hospital, provided the terms of such endowments are not in their judgment detrimental to the best interests of the hospital and the purpose for which it is and is to be conducted. Such endowments shall be encouraged and accepted without discrimination against or discouragement of endowments providing for homeopathic practice and treatment.

8. The donors of furnished rooms shall be accorded the privilege of maintaining the furnishings and supplies for such rooms and all such rooms shall be marked by door plates or in some other suitable manner.

9. The alumni of the Hahnemann Hospital Training School for Nurses and the nurses now in training at the hospital upon their graduation shall be given the status of alumni of the University Training School for Nurses.

10. The pharmacy of the hospital shall be kept supplied and equipped with homeopathic remedies and shall have a pharmacist competent to dispense such remedies, provided that if at any time there is no patient at the hospital receiving or requesting homeopathic treatment the requirements of this section may be dispensed with as long as such condition exists.

11. Whenever available, and a competent person can be obtained, the Directress of Nurses shall be homeopathically trained.

12. In conformity with the fulfillment of that certain agreement entered into between The Regents and the Hahnemann Medical College of the Pacific, bearing date the 5th day of October, 1916, for the teaching of homeopathy, The Regents agree to give the professors of homeopathy of the University Medical School rights to the admission of patients to the Hahnemann Hospital or University Hospital equal to those of other professors of the University Medical School.

13. Subject to the foregoing terms, and as to any endowments or trust funds received by it hereunder, subject to the trusts upon which said endowments or trust funds were created, The Regents shall have the right to sell or dispose of any and all of the assets or the property to be transferred and conveyed to it hereunder, to change the site of said hospital, and, in general, to conduct the same in the manner which in their judgment will best subserve the purpose of said hospital and its usefulness to the public.

In witness whereof, the parties hereto have, by their respective officers thereunto duly authorized, hereunto signed their corporate names and affixed their corporate seals, the day and year first above mentioned."

Radio Building:

On recommendation of the Committee on Grounds and Buildings it was voted to retain the Radio Building, one of the temporary buildings erected for military training purposes, as an annex to the Mechanics Building, with the understanding that it is to be removed from the campus as soon as a permanent addition to the Mechanics Building is built, which it is hoped may be done at an early date.

Resignation of the Attorney of the Regents:

The resignation of Warren Olney, Jr., attorney of the Regents, which was occasioned by his acceptance of an appointment as Associate Justice of the Supreme Court of California, was accepted effective March 1, 1919, and the appointment of J. M. Mannon, Jr., to the vacant place with a salary at the rate of \$4000 per annum was approved as of the same date.

MARCH, 1919

Committee on Spanish American Relations:

A report of the Faculty Committee on Spanish American relations to President Wheeler was approved, providing for an exchange of professors between the University of California and other American universities and the University of Chili, each institution paying the salary of its own faculty members and the traveling expenses involved.

Appointment of Sather Professor of Classical Literature:

The acceptance of Dr. Edward Kannard Rand, professor of Latin at Harvard University since 1909, as Sather Professor of Classical Literature for the academic year 1919-20 with salary of \$5500 for the period was announced.

Denicke Loan Fund:

The appointment of a Regent to take the place of Regent F. W. Dohrmann on the Executive Board of the Denicke Loan Fund was referred to the President with power to act. The President appointed Rudolph Taussig.

APRIL, 1919

Death of Ramon Jaén:

The President reported with regret the death in Berkeley on March 26, 1919, of Ramon Jaén, Associate Professor of Spanish.

Sale of Kearney Vineyard Lands:

It was voted to authorize the sale of the following lands at Kearney Vineyard: Lot 101, \$250 per acre; lots 31-42, inclusive, \$300 per acre; lots 13-16, inclusive, \$300 per acre; south half of lots 9 and 10, \$300 per acre; lots 3-8, inclusive, \$300 per acre; lots 45-50, inclusive, \$250 per acre; lots 51 and 52, \$400 per acre; lots 53-56, inclusive, \$400 per acre; lots 19 and 20, \$250 per acre; lots 1, 2 and 25-30, inclusive, \$300 per acre—these lands being situated at a distance from the center of the ranch and being difficult of profitable administration by the University. The sale prices were as recommended by the board of appraisers appointed by the Regents. Those who generously served on this board were: Senator Chandler, Mr. Puckhaber and Mr. Milo Rowell, all of Fresno.

**Resolution of the United States Department
of Agriculture, Forest Service:**

The following resolution of the United States Department of Agriculture, Forest Service, was presented:

“Whereas, the success of the Forest Officers’ meeting held at Davis between February 10 and February 21 was largely due to the many courtesies extended by the University of California through the Experimental Farm at Davis,

Therefore, be it resolved that we extend our keen appreciation and thanks to the Board of Regents of the University of California, to Dean Van Norman of the University Farm and his able assistants for the assistance rendered and the many helpful suggestions which have contributed to the success of the meeting.” (Unanimously adopted February 21.)

MAY, 1919

Communication from Secretary Franklin K. Lane:

A letter was received from the Secretary of the Interior, Franklin K. Lane, expressing his appreciation for the kindness of the University in granting a leave of absence to Professor F. H. Probert in order that he might undertake certain investigations of the mining conditions in Europe. Secretary Lane expressed his appreciation of the valuable service rendered by Professor Probert in this capacity and his feeling that Professor Probert will bring back with him to the College of Mining much information which will be of real value in connection with his work at the University.

Death of Henry Morse Stephens:

The President reported with regret the death in San Francisco, on April 16, 1919, of Henry Morse Stephens, Sather Professor of History and Dean of the College of Letters and Science, and the Board voted to place upon the minutes the following memorial:

DR. HENRY MORSE STEPHENS
Sather Professor of History

He was born in Edinburgh, Scotland, October 3, 1857, son of John Edward and Emma Morris Stephens; educated at Haileybury College, England, 1871-76, and at Balliol College, Oxford (B.A. 1880 and M.A. 1892); attended lectures at Bonn and Paris. From 1880 to 1892 the higher type of journalism furnished him a chief livelihood and his articles and editorials in the *Academy*, *Daily Chronicle*, *Speaker*, *Statesman*, *Friend of India*, and *India* gave him name and standing particularly in the field of British colonial history and politics. For four years he was a lecturer in the Oxford University Extension system, and from 1892 to

1894 lecturer at Cambridge (England) on Indian history. In 1894 he began at Cornell University his brilliant career as Professor of European History and after eight years removed to the University of California, where a sympathetic environment opened to him for seventeen years a free opportunity for use to the full of his extraordinary talents as scholar and organizer, and as teacher and inspirer of youth.

Among his writings are included a "History of the French Revolution," two volumes; "The Story of Portugal"; "Albuquerque" (Rulers of India); "Revolutionary Europe"; "Syllabus of Lectures on Modern European History" (with President A. Lawrence Lowell); "Colonial Civil Service"; "Speeches of the Statesmen of the French Revolution"; "Documents of English Constitutional History" (with Professor G. D. Adams); the "Pacific Ocean in History" (with Professor H. E. Bolton).

Other plans of authorship were laid aside or postponed in deference to the higher interest of living personality and the superior bidding of the call to teach. His earlier ideals of historical study apparently assigned him to the realistic school of scientific criticism; but his native instinct of human sympathy drew him inevitably back toward the interpretation of human character. And there he stood, whether he willed it or not—an historian of human personality. His historic world was shapen on the rich materials offered and ordered by his matchless mind, just as personal attachments and amazing loyalties made up the structure of his inner world.

Gifted for the exercise of human fellowship, the charm of conversation, and the remembrance of friends, he was beyond all ordinary measure a social being.

Devoid of all ambition to acquire for himself possession or station, he lived for his work and for the University—especially, within the University, for his academic children, to whose well-being and growth he gave the constant thought and zeal of all his days and all his love.

HENRY MORSE STEPHENS
Loyal friend, wise counsellor;
Great scholar, superb teacher.

Admission Requirements:

President Wheeler presented to the Board the following action of the Academic Senate with reference to admission requirements:

1. The admission requirements to all colleges of the University shall be on the basis of graduation from an accredited high school of California; provided, the State Board of Education establishes a minimum core of requirements for graduation from every high school course; the program to be so organized as to give breadth and solidity to the secondary course, and at the same time provide a reasonable opportunity to satisfy prerequisites for university study.

2. The high school principal's recommendation shall certify the student's fitness to pursue profitably university work and shall list the subjects completed by the student in his high school course.

3. Students so recommended are to be admitted regularly to the colleges of their choice, without matriculation conditions.

4. Each college retains the right to recommend to the Senate its specific requirements for the Junior Certificate, if any, and for graduation, in its various curricula. Each college is to announce these specific requirements and to advise prospective students that failure wisely to select prerequisite high school and lower division courses may prevent graduation in four years.

On motion the Board approved the foregoing and adopted it as the action of the Board.

Stephens Memorial:

The recommendation of the Comptroller that subscriptions be collected in the name of the Regents for the proposed Stephens memorials and that the Regents act as treasurer for these memorials, was approved.

Honorary Degrees:

It was voted on the recommendation of President Wheeler that the honorary degree of LL.D. be conferred on the following named persons at the next Commencement:

Warren Olney, Jr.
Vernon Charles Kellogg
David Prescott Barrows
Herbert Charles Moffitt
Ralph Palmer Merritt
Aurelia Henry Reinhardt
Ray Lyman Wilbur.

Death of Phoebe Apperson Hearst:

The President reported with regret the death, on April 13, 1919, of Phoebe Apperson Hearst, a Regent of the University, and it was voted to spread the following memorial on the minutes of the Board:

PHOEBE APPERSON HEARST
Gentlewoman and Public Servant

By native instinct she followed the quieter paths, but the possession of power and rare gifts of mind opened before her a duty toward her fellowmen which she did not evade. To bring light and love into the lives of others, that was her burning desire. To forward every good enterprise which helped young people gain their birthright, this was her open door to the obligations of public service. Her early experience as a school teacher led on through one trusteeship after another to the

Regency of the University. She rejoiced in the continuous tides of young life which refresh the brook-beds of the College, as from some fountain of perpetual youth; she heard gladly too the voice of children. Art and the love of beauty, as handmaidens of order, commanded her zeal; and her first interest lay in those early arts of human life which represent the emergence of human culture into the light. One of her last desires, expressed on what proved, alas, her deathbed was that she might live to build here on the University grounds the first unit of the Art Museum which she had planned for her rich collections already given to the University.

In those last days, her mind singularly clear, she was always thinking of the many things she had yet to do, the messages to send, the last injunctions to give,—so much to do and the hours so short. It was a full, rich, abundant life that she had lived, abounding always in care, often in pain, but a great life, gloriously worth while because so lived that the community is greatly bettered thereby. Phoebe Apperson Hearst: gentlewoman and public servant,—a blessing to her day and generation.

JUNE, 1919

Nomination of Members of the California Historical Survey Commission:

The Regents nominated Professor Herbert E. Bolton to the Governor of California, for his approval as a member of the California Historical Survey Commission for a term of two years ending July 1, 1920, in accordance with an act approved by the Governor of California on June 12, 1915. This is a reappointment.

Carnegie Retirement Allowances:

The President reported that the Carnegie Foundation for the Advancement of Teaching had granted the following pensions:

Benj. Ide Wheeler, \$4000, commencing July 15, 1919.

Mrs. Mattoon Clapp, widow of Professor E. B. Clapp, \$1140, commencing March 9, 1919.

J. C. Rowell, \$1900, commencing July 1, 1919.

Contract for Paving Bancroft Way:

A contract for street work bordering the campus on Bancroft Way, Berkeley, was approved, and the President and Secretary of the Board were authorized and directed to execute a contract with Bernard Ransome.

Legislative Bills:

The Finance Committee reported that the Governor had signed all legislative appropriation bills contained in the Regents' budget presented to the State Board of Control under date of December 3, except the

appropriation for \$25,000 for University Farm buildings. In addition to these bills the Governor has signed the Farm Advisor Bill for \$166,924; Assembly Bill No. 626 creating the Los Angeles Branch of the University of California; and Assembly Bill No. 38 creating a University Farm at Riverside and appropriating \$30,000 toward the purchase of the land.

Purchase of Bear Gulch Water Company Stock and Bonds:

The purchase of forty-one bonds and 1000 shares of stock of the Bear Gulch Water Company from the Felton Company at an agreed price of \$50,000 was authorized. The purchase of these bonds and stock will give the Regents complete ownership of the company.

Blake, Moffitt & Towne Leases:

The action of the Finance Committee was approved and confirmed, in having authorized the President and Secretary of the Board to execute an agreement of lease with Blake, Moffitt & Towne, dated February 1, 1919, covering two floors of the Buckingham & Hecht Building for a period of ten years commencing November 1, 1917, and with an option for an additional term of ten years upon the same terms and conditions, being a continuation of the present lease; and an agreement of lease dated February 1, 1919, covering the Blake, Moffitt & Towne Building, extending the term of a lease dated January 25, 1912, to expire on October 31, 1927, and granting an option for an additional term of ten years from and after that date.

Construction of Military Science Building

On the joint recommendation of the Committee on Grounds and Buildings and the Finance Committee it was voted to expend \$7500 for a temporary office building for the Department of Military Science and Tactics from the permanent building fund for the year 1919-20.

Alterations and Repairs in Buildings of the Medical Group

On joint recommendation of the Committee on Grounds and Buildings and the Finance Committee it was voted to appropriate \$8000 from the permanent building fund for the year 1919-20 for alterations in the buildings of the Medical group on the Parnassus Avenue campus in San Francisco.

Southern Branch University of California:

In view of the signing of Assembly Bill No. 626 by the Governor of California and the creation thereby of the University of California on the site of the Los Angeles State Normal School, the following recommendations were approved:

1. That the Regents of the University of California shall give to this new undertaking the name of the Southern California Branch of the University of California, and that this name shall cover the activities of

the institution, including such Normal School courses as are now being given, or which may be given in the future, and such courses of freshmen and sophomore University instruction as may be offered hereafter.

2. That there be created an Advisory Administrative Board to immediately undertake the task of assisting Dr. Moore in the creation of the necessary academic program for the year commencing July 1, 1919, and that this Board shall consist of Professor Monroe E. Deutsch, Dean of the Los Angeles Summer Session, Professor Baldwin M. Woods, University Examiner for Junior Colleges, and the Comptroller of the University.

3. That Dr. Ernest C. Moore, at present President of the Los Angeles State Normal School, shall at the time of the transfer of the Los Angeles State Normal School property to the Regents of the University of California be given the title of Director of the Southern California Branch of the University of California, and shall be placed in charge of the academic administration of the institution, subject to the President of the University.

4. That the Regents request the Attorney of the Board of Regents to outline the proper legal steps for the transference of the property, buildings and equipment of the Los Angeles State Normal School to the Regents of the University of California; and further that the Regents of the University of California immediately inform the Board of Trustees of the Los Angeles State Normal School and the Governor of the State of this program, and request the coöperation of the Trustees of the Los Angeles State Normal School in the fulfillment of the necessary steps in the creation of the Southern California Branch of the University of California.

Committees of the Board:

A recommendation of the Committee on Committees was approved that standing order No. 90 of the Orders of the Board now reading:

“There shall be the following standing committees:

On Finance: Consisting of six appointed members.

On Grounds and Buildings: Consisting of five appointed members.

On Medical Instruction: Consisting of five appointed members.

On University Hospital: Consisting of five appointed members.

On Agriculture: Consisting of five appointed members. The Dean of the College of Agriculture shall be a consulting member, but without vote.

On Lick Observatory: Consisting of four appointed members.

On Scripps Institution for Biological Research: Consisting of three appointed members.

On Wilmerding School: Consisting of three appointed members.

On Curriculum and Degrees: Consisting of three appointed members.

There shall be two alternative members for each standing committee, these alternates to serve when called upon by the chairman of the respective committees because of the absence or inability to act of regular members of the committee.”

be amended to read as follows:

“There shall be the following standing committees:

On Finance: Consisting of five appointed members.

On Grounds and Buildings: Consisting of five appointed members.

On Agriculture: Consisting of five appointed members.

The Dean of the College of Agriculture shall be a consulting member but without vote.

On Medical Instruction and University Hospitals: Consisting of five appointed members.

On Lick Observatory: Consisting of five appointed members.

On Scripps Institution and Southern Branch: Consisting of seven appointed members.

On Library: Consisting of five appointed members.

On Wilmerding School: Consisting of three appointed members.

On Curriculum and Degrees: Consisting of five appointed members and the President of the Alumni.

On Endowments: Consisting of seven appointed members.

There shall be two alternate members for each standing committee, these alternates to serve when called upon by the chairman of the respective committees because of the absence or inability to act, of regular members of the committee."

On recommendation of the Finance Committee the Board also approved the amendment of Standing Order No. 92 so as to include in the membership of the Executive Committee the President of the Alumni Association.

Retirement of Regent I. W. Hellman:

The retirement of Regent I. W. Hellman was reported to the Board and it was voted that the Secretary should express to him the regret of the Board that increasing years made it necessary for him to close his long career of devoted service to the University.

AUDITOR'S CERTIFICATE

To the Finance Committee of the

Board of Regents of the University of California:

DEAR SIRS: The books and accounts of the University of California have been audited for the year ended June 30, 1919, and we certify that the Balance Sheet of June 30, 1919, the statement of Income and Expenditures for the year ended June 30, 1919, and the accompanying schedules are in accordance therewith, and, in our opinion, correctly exhibit the financial condition of the University.

The investment securities have all been examined, and agree with the records.

The income from the Trust Funds has been expended in accordance with the specified conditions of the various trusts.

McLAREN, GOODE & Co.,

Certified Public Accountants.

SAN FRANCISCO, CALIFORNIA,

January 8, 1920.

BALANCE SHEET

ASSETS

Schedules

Real Estate and Improvements:		
"A"	Real Estate in Berkeley	\$1,545,822.44
"B"	Buildings and Improvements in Berkeley	5,718,391.08
"C"	Real Estate and Improvements not in Berkeley	3,338,373.98
		<hr/> \$10,602,587.50
Equipment:		
	General	\$2,859,139.79
	Bancroft Library	250,005.00
		<hr/> 3,109,144.79
Inventories—Stores on hand:		
	San Francisco Storehouse	\$4,234.83
	Berkeley Storehouse	7,768.64
	University Hospital Stores	34,454.13
		<hr/> 46,457.60
Investments:		
"D"	Notes Receivable	\$603,392.45
"E"	Bonds	1,363,421.00
"F"	Stocks	205,113.00
"G"	Real Estate held as Investments	3,738,771.69
	Balance on Contract for Sale of Real Estate	1,300.00
	Hooper Foundation Expenditures	607,549.24
		<hr/> \$6,519,547.38
Suspense Account—		
	Montgomery Avenue Bonds	21,999.00
		<hr/> 6,541,546.38
"H"	Departmental and Other Expenditures carried for- ward	340,294.65
"I"	Amounts due from State of California under vari- ous appropriations	339,966.80
"J"	Sundry Debtors	309,286.67
		<hr/> \$21,289,284.48

JUNE 30, 1919

LIABILITIES

Schedules

"L"	University of California,	
	Surplus Invested in Fixed Assets	\$13,621,076.43
"M"	Endowment Funds	6,674,027.11
	Gains in Endowment Pool Investments	2,186.84
"N"	Fund Income Accounts—Unexpended Balances	56,098.09
"O"	Donation Accounts—Unexpended Balances	46,714.35
"P"	Balances on hand to be used for specific purposes....	158,514.50
"Q"	Sundry Creditors	477,940.86
	Permanent Building Fund	51,817.98
	Revenue Account Surplus	144,863.99
"K"	Cash Overdraft	56,044.33

\$21,289,284.48

[Schedule "A"]

REAL ESTATE IN BERKELEY

University Campus site	\$1,000,000.00
Hearst Hall and Hearst Cottage site	7,000.00
Hillegas Tract site	194,991.04
Palmer House site	17,500.00
Barrow Street property	63,450.00
Sylvan Way and College Avenue buildings and lands	31,924.58
Sylvan Way property	15,395.00
Telegraph Avenue and Allston Way property	47,105.21
Watershed lands	168,456.61
	<hr/>
	\$1,545,822.44
	<hr/>

[Schedule "B"]

BUILDINGS AND IMPROVEMENTS IN BERKELEY

Acid House	\$480.00
Agriculture—Forestry Division—Portable house	1,237.76
Agriculture Hall	212,883.85
Anatomical Laboratory	8,900.00
Architectural Building	23,377.53
Bacon Hall	60,515.74
Bacteriological Laboratory Building	480.00
Barn	2,300.00
Boalt Hall of Law	159,287.61
Botany Building	5,600.00
Budd Hall	7,200.00
California Field Bleachers	20,000.00
California Hall	275,164.73
Campanile	216,983.02
Cement sidewalks	596.25
Chemistry Addition No. 2	28,648.75
Chemistry Auditorium	36,314.67
Chemistry Building	81,000.00
Chemistry Storehouse	11,459.53
Civil Engineering Hall	39,307.15
Civil Engineering Laboratory	2,400.00
Civil Engineering Testing Laboratory	10,116.08
Concrete Bridge (near Faculty Club)	1,387.92
Concrete Bridge (near Football Statue)	3,384.33
Concrete Bridge (Telegraph Avenue)	10,922.86
Conservatory Building	10,800.00
Dairy Barn	2,400.00
Domestic Science Building	16,481.70
Drawing Building	19,354.18
Drinking Fountain (Class of 1914)	619.10
East Hall	18,000.00
Electric construction on Campus	27,028.10
Entomological Laboratory	2,569.99
Faculty Club Building	30,000.00
Fertilizer Control Laboratory	26,385.72
Filter Plant (Strawberry Canyon)	6,406.48
Gilman Hall	197,178.77

Carried forward \$1,577,171.82

[Schedule "B"—Continued]

<i>Forward</i>	\$1,577,171.82
Girton Hall	4,032.34
Greek Theatre	45,000.00
Handball Courts	666.50
Harmon Gymnasium Building	50,181.89
Hearst Hall	59,398.27
Hearst Memorial Mining Building	644,400.00
Heating system	60,894.19
Hilgard Hall	365,078.52
Hygiene and Pathology Building	39,450.22
Landscape gardening, etc.	6,213.70
Manure pit—Dairy	1,031.15
Mechanics Building	61,025.00
Milk House—Dairy	4,160.60
Mill—Carpentry Shop	3,110.35
Mining Building Fountain and Circle	15,887.54
John Mitchell Monument	358.95
Museum Building	3,667.77
New Roads—California Hall to Agriculture Hall	4,536.16
Dairy Road	895.50
Dana to Euclid Avenue	100.50
La Loma wagon road	354.95
North of University Library	35,438.45
South Drive	13,485.09
Telegraph Avenue to California Hall	11,259.33
North Hall	2,000.00
Nursery and Propagation of plants and trees	1,500.00
Painters' Shop	2,000.00
Philosophy Building	8,000.00
Plant Houses	700.00
Plumbing Shop	1,200.00
Platform Scales	350.00
Power House—Building and machinery	153,497.56
President's House	113,868.35
President's House—Walks and roads	12,845.01
Printing Office Building	21,441.74
Radio Building—Department of Mechanics	825.00
Rifle Range	501.90
Running Track	60,000.00
Sather Esplanade	40,428.69
<i>Carried forward</i>	\$3,426,957.04

[Schedule "B"—Continued]

<i>Forward</i>	\$3,426,957.04
Sather Gateway	40,118.77
Senior Hall	5,915.02
Shooting Gallery	50.00
South Hall Addition	5,681.63
South Hall	129,578.75
Spreckels Physiological Laboratory	25,000.00
Storage bins	1,000.00
Storehouse Building	10,280.53
Strawberry Canyon weir	569.80
Students' Infirmary and Annex Buildings	29,073.09
Students' Observatory	8,500.00
Sun-dial	350.00
Superintendent's Office	1,200.00
Surfacing of roads and walks	6,769.86
Swimming Pool	17,200.00
Tennis Courts	22,115.24
Tool House—Botany Garden	282.90
Trunk Sewer	6,356.10
University Cottages	5,900.00
University Library Building	1,236,198.27
Vertebrate Zoology Museum Building	15,094.31
Viticultural Laboratory	400.00
Wheeler Hall	709,056.76
Women's Athletic Field	2,297.67
Women's Swimming Pool	12,445.34
	<hr/>
	\$5,718,391.08
	<hr/>

[Schedule "C"]

REAL ESTATE AND IMPROVEMENTS NOT IN BERKELEY

Affiliated Colleges, buildings and site	\$405,707.74
Congressional lands	10,568.92
Dentistry Building	29,940.98
Hahnemann Hospital site	25,000.00
Hahnemann Hospital buildings	144,824.42
Hog Serum Plant—Sixty-sixth Avenue, Oakland	8,695.92
La Jolla buildings	101,655.36
La Jolla lands	90,000.00
Lick Observatory—	
Lands and buildings	387,000.00
Cook Tract	960.00
Duckworth Tract	316.42
Hortzoke Tract	262.73
Holden Tract	511.25
Barn	1,254.95
Dormitory and cottages	55,169.08
Electric light and power plant	14,350.26
Tank	2,701.00
Vault	19,834.70
Los Angeles buildings	24,999.70
Los Angeles real estate	100,000.00
Meloland buildings	3,021.53
Pacific Grove real estate	2,500.00
Potrero Avenue lots	10,364.39
Public building lands	800.00
Riverside buildings and improvements	174,970.73
Riverside lands	55,769.90
Riverside real estate	2,500.00
San Francisco Institute of Art	235,150.00
Tulare County real estate	10,450.00
University Farm, Davis	567,747.98
University Hospital Building	671,353.63
Whittier buildings	12,821.31
Wilmerding School—	
New building	75,044.68
Old building	24,906.46
Real estate	67,219.94
	<u>\$3,338,373.98</u>

[Schedule "M"]

ENDOWMENT FUNDS

Fund	Use of Income	Gross Income 1918-1919	Amount of Fund
Alumnae Y.W.C.A. of University of California.....	Payment to secretary	\$29.99 B	\$600.00
Alumni Association Life Membership	Payment to Alumni Association	243.45 B	4,250.54
Alumni Hall	Added to fund	721.94 A	13,146.92
Alumnus Book	Purchase of books	307.77 C	5,372.76
Associated Women Students (Housing)	Added to fund	67.46 A	1,228.56
Philo Sherman Bennett Prize	Prize	38.70 C	675.57
Joseph Bonnheim Scholarship Endowment	Scholarships	2,162.50 C	70,000.00
Horace W. Carpenter Endowment	Books and materials (Oriental)	1,304.81 C	75,000.00
Class of 1874 Library	Purchase of books	3.03 C	52.91
Class of 1881 Loan	Added to fund	37.05 A	1,309.02
Class of 1886 Loan	Added to fund	166.06 A	6,061.88
Class of 1887 Library	Purchase of books	25.20 C	440.00
Class of 1895 Loan	Added to fund	16.09 A	816.97
Class of 1897 Library	Purchase of books	6.02 C	105.08
Class of 1897 Loan	Added to fund	25.88 A	1,269.79
Class of 1898 Loan	Added to fund	9.61 A	268.70
Class of 1900 Library	Purchase of books	36.01 C	628.50
Class of 1902 Library	Purchase of books	7.16 C	125.00
Class of 1903 Loan	Added to fund	98.47 A	1,425.80
Class of 1906 Fund	Payment to secretary of class	17.18 B	300.00
Class of 1907 Endowment (Books)	Purchase of books	28.64 C	500.00
Class of 1907 Endowment (Class)	Payment to secretary of class	8.60 B	150.00
Class of 1908 Fund	Added to fund	11.76 A	217.07
Class of 1909 Endowment	Payment to secretary of class	34.37 B	600.00
Class of 1909 Loan	Payment to secretary of class	22.34 B	1,145.00
<i>Carried forward</i>		\$5,430.09	\$185,690.07

[Schedule "M"—Continued]

Fund	Use of Income Forward	Gross Income 1918-1919	Amount of Fund
Class of 1910 Endowment	Payment to secretary of class	77.34 B	\$185,690.07
Class of 1911 Fund	Payment to secretary of class	57.29 B	1,350.00
Class of 1911 Loan	Payment to secretary of class	14.75 B	1,000.00
Class of 1912 Fund	Payment to secretary of class	108.84 B	758.72
Class of 1913 Fund	Payment to secretary of class	68.17 B	1,900.00
Class of 1914 Fund	Payment to secretary of class	73.04 B	1,190.00
Class of 1915 Fund	Payment to secretary of class	57.29 B	1,275.00
Class of 1916 Fund	Payment to secretary of class	51.55 B	1,000.00
Class of 1917 Endowment	Payment to secretary of class	114.57 B	900.00
Class of 1919 Fund	Payment to secretary of class	4.08 B	2,000.00
Class of Eighty-five	Loans to students	61.19 C	2,000.00
Edith Claypole Memorial Research (Pathology)	$\frac{1}{4}$ added to fund	155.72 A	1,068.17
	$\frac{3}{4}$ for fellowship	467.16 C	11,155.47
P. Charles Cole Scholarship	Scholarship	156.13 C	2,837.58
Therese F. Colin European Fellowship	Fellowship	116.58 C	10,761.94
Therese F. Colin European Fellowship, No. 2	Payment to beneficiary	67.14 B	1,171.89
Consolidated Perpetual Endowment	General support	54,713.08 C	992,217.27
Emily Chamberlain Cook Prize	Prize in poetry	71.64 C	1,272.19
Horace Davis Library	Purchase of books	572.84 C	10,000.00
W. R. Davis Scholarship	Scholarships	630.13 C	11,000.00
E. A. Denicke Library	Purchase of books	114.57 C	2,000.00
E. A. Denicke Loan	Added to fund	387.95 A	7,401.55
Dental Endowment	Added to fund	392.15 A	7,141.18
Doe Library	Unproductive		1.00
F. W. Dohrmann Memorial Loan	Added to fund	310.53 A	5,942.79
Carried forward		\$64,273.82	\$1,263,034.82

[Schedule "M"—Continued]

Fund	Use of Income Forward	Gross Income 1918-1919	Amount of Fund
Dolbeer Scholarship	Scholarships	990.06 C	\$1,263,034.82
Helen Du Bois Endowment	Scholarships	287.36 C	17,283.35
Federal Endowment	General support	42,279.70 C	5,016.52
Cora Jane Flood Endowment	Fellowships and Dept. of Economics..	20,949.84 C	732,485.14
Dr. C. W. and Mrs. Sarah E. Fox Memorial	Beds in University Hospital	4,000.00 C	377,549.02
Furrey Endowment Fund	Indefinite	10.48 C	100,000.00
James M. Goewey Scholarship	Scholarships	940.34 C	1,003.82
Grubstake "W" Loan	Added to fund	9.11 A	16,415.50
Hammerslag Loan	Loans to students	344.98 C	492.40
Phoebe A. Hearst Fountain	Purchase of books	11.89 C	6,000.00
Isaias W. Hellman Scholarship	Scholarships	2,000.00 C	207.60
Hesse Memorial Scholarship	Unproductive		50,000.00
Hilgard Fund	Payment of annuity	1,677.20 B	3,800.00
Hindusthane Students Loan	Added to fund .....	.41 A	32,500.00
Chas. M. Hitchcock Endowment	Lectures	572.84 C	200.41
Geo. Williams Hooper Endowment	Unproductive		10,000.00
Cornelius B. Houghton Scholarship	Scholarships	171.85 C	1,000,000.00
Bruce Howard Memorial	Scholarships	130.09 C	3,000.00
Howison Foundation	Payment of annuity	2,743.96 B	10,000.00
Samuel C. Irving Prize	Prize	28.64 C	75,000.00
Albert Sidney Johnston Memorial Scholarship	Scholarships	200.49 C	500.00
Carrie M. Jones Scholarship	Scholarships	3,516.44 C	3,500.00
Jucksch Endowment	Indefinite	12.00 C	100,000.00
Kearney Bequest	Department of Agriculture, etc.	34,234.63 C	600.00
Martin Kellogg Fellowship Endowment	Fellowship	1,031.86 C	1,068,506.19
			20,000.00
	<i>Carried forward</i>	\$180,417.99	\$4,897,094.77

[Schedule "M"—Continued]

Fund	Use of Income <i>Forward</i>	Gross Income 1918-1919	Amount of Fund
Wm. Watt Kerr Memorial	Loans to Medical students	\$180,417.99	\$4,897,094.77
Herbert Kraft Scholarship	Scholarships	401.02 C	7,000.54
Geo. Ladd Scholarship	George Ladd Prix de Paris	2,864.20 C	50,000.00
Leona Lebus Endowment	Support—University Hospital	1,968.82 C	27,074.43
LeConte Memorial Fellowship	Fellowship	229.13 C	4,000.00
Lick Observatory Fund	General support	595.76 C	10,400.00
Loan Fund No. 2	Unproductive	4,645.36 C	90,018.16
Loan Fund No. 3	Added to fund	2.05 A	200.00
John W. Mackay, Jr., Endowment	Fellowships and Dept. of Mechanics	5,680.20 C	104.69
Massachusetts Relief Fund Endowment	Support—University Hospital	5,728.40 C	100,000.00
Medal Loan Fund	Added to fund	4.24 A	364.91
Memorial Gift Fund—Class of 1916	Added to fund	91.67 A	1,669.30
Menorah Prize	Added to fund	1.28 A	50.00
Men's Dormitory	Added to fund	30.71 A	559.10
Eugene Meyer, Jr., Library Endowment	Purchase of books	114.57 C	2,000.00
D. O. Mills Endowment	Department of Philosophy	9,770.00 C	170,553.76
Mining Students Loan	Added to fund	153.58 A	6,551.76
Nalanda Loan	Added to fund	1.02 A	51.68
Napa Seminary Loan	Added to fund	18.34 A	849.50
Bernard Nathan Scholarship	Scholarships	286.42 C	5,000.00
Oriental Institute Endowment	Unproductive		4,959.55
Paget Scholarship Fund	Scholarship	172.37 C	3,009.09
Whitney Palache Endowment	Bed in University Hospital	72.33 C	10,000.00
Frank M. Pixley Scholarship	Scholarship	204.11 C	3,563.22
Prytanean Fund (Students' Union)	Added to fund	23.01 A	419.12
<i>Carried forward</i>		\$213,476.58	\$5,495,493.58

[Schedule "M"—Continued]

Fund	Use of Income	Gross Income 1918-1919	Amount of Fund
	<i>Forward</i>	\$213,476.58	\$5,495,493.58
Prytanean Fund (Hospital)	Added to fund	14.11 A	302.64
Prytanean Fund (Housing)	Added to fund	72.52 A	1,320.70
Michael Reese Library	Purchase of books	2,864.19 C	50,000.00
Richardson Latin Translation Prize	Prize	91.65 C	1,600.00
Ralph D. Robertson Memorial Loan	Added to fund .....	.56 A	320.56
Herman Royer Endowment	Added to fund	305.74 A	5,567.73
San Francisco Girls' Union Scholarship	Scholarship	250.00 C	5,000.00
Lucy M. Shaw Bequest	Bed in Hahnemann Hospital	New C	5,000.00
Sheffield Sanborn Scholarship	Scholarships	859.26 C	15,000.00
San Joaquin Women's Club Loan	Added to fund	4.32 A	147.13
Jane K. Sather Fund (Campanile and bells)	Added to fund (awaiting distribution) ..	177.04 A	8,016.98
Jane K. Sather Classical Chair	Departments of Greek and Latin	6,944.06 C	124,165.78
Jane K. Sather Historical Chair	Department of History	6,052.70 C	107,547.39
Jane K. Sather Historical Library	Purchase of books	724.72 C	12,461.68
Jane K. Sather Law Library	Purchase of books	1,234.09 C	21,543.35
Jane K. Sather Library	Purchase of books	572.84 C	10,000.00
Jane K. Sather Fund (awaiting distribution)	Added to fund	2,794.66 A	51,023.15
Snell Seminary Memorial Loan	Added to fund	1.16 A	314.77
Special Senior Class Loan	Added to fund	9.66 A	193.11
Horatio Stebbins Scholarship	Scholarship	229.13 C	4,000.00
Students' Coöperative Society	Added to fund	603.07 A	12,517.75
Summer Session Endowment	Indefinite	343.70 C	6,000.00
Bertha Henicke Taussig Memorial Scholarship	Scholarships	572.84 C	10,000.00
Willard D. Thompson Memorial	Scholarships	3,328.47 C	55,734.98
Edward Tompkins Endowment	Department of Oriental Languages	6,130.58 C	106,829.09
<i>Carried forward</i>		\$247,657.65	\$6,110,110.37

[Schedule "M"—Continued]

Fund	Use of Income	Gross Income 1918-1919	Amount of Fund
	<i>Forward</i>	\$247,657.65	\$6,110,110.37
University Endowment	General support	4,052.17 C	70,738.30
University Hospital Endowment	Support—University Hospital	37.22 C	649.68
University Hospital Endowment (San Francisco Maternity)	Support—University Hospital	572.84 C	10,000.00
University Medal	University Medal	223.17 C	3,896.00
Veltin Endowment	Students' Infirmary	57.29 C	1,000.00
Walcott Loan Fund	Added to fund	22.29 A	327.34
F. J. Walton Memorial Loan	Added to fund	466.40 A	8,653.19
Mary J. Watson, M.D.—Homeopathic Instruction	Scholarship—Medical School	71.60 C	1,250.00
Barbara Weinstock Lectureship	Lectures	268.47 C	6,850.00
Whiting Fund	Fellowships and Dept. of Physics	1,509.42 C	26,350.00
J. Clute Wilmerding Endowment	Support—Wilmerding School	24,212.39 C	424,536.17
Women's Dormitory	Added to fund	162.99 A	2,968.18
Xi Psi Phi Loan	Added to fund	5.87 A	207.95
Y.W.C.A. Endowment	Payment to secretary Y.W.C.A.	324.91 B	6,500.00
		<hr/>	<hr/>
		\$279,644.68	\$6,674,027.11
		<hr/>	<hr/>

[Schedule "M"—Concluded]

SEGREGATION OF INCOME	
A For Additions to Funds	\$7,376.48
B For Payment to Beneficiaries of Trust Funds	5,796.06
C For Current Use, etc.	266,472.14
	<hr/>
	\$279,644.68
	<hr/>

NOTE: With regard to the income shown as "For Current Use" it should be understood that in several cases unexpended income at the end of the year is added to the principal of the fund.

RECONCILIATION OF ENDOWMENT FUNDS	
Total Funds June 30, 1918	\$5,490,430.85
Additions to Endowment as per Expenditure Schedule No. 18	135,486.54
Transfer from University of California Surplus Account to set up Kearney Bequest as Endowment, heretofore treated as general University property	1,068,506.19
	<hr/>
Less Withdrawals from Endowment Funds used as Income (See Income Schedule No. 9)	\$6,694,423.58
Portion of Special Senior Class Loan Fund refunded to donor	1,000.00
	<hr/>
	20,396.47
	<hr/>
Total Funds June 30, 1919	\$6,674,027.11
	<hr/>

INCOME

FROM JULY 1, 1918, TO JUNE 30, 1919

Schedules

No. 1	United States	\$128,631.09
No. 2	State Appropriations	1,995,051.36
No. 3	Students' Fees and Deposits	353,989.43
No. 4	Hospitals, Infirmary and Professional Colleges	277,855.30
No. 5	Departmental Sales and Miscellaneous Receipts	375,875.34
No. 6	Income from Endowment Investments: For Current Use .....\$266,472.14 For Additions to Endow- ment Funds 7,376.48 For Payments on Trust Funds 5,796.06 <hr/>	279,644.68
No. 7A	Gifts for Current Use	94,429.08
No. 7B	Gifts for Buildings and Equipment	54,596.60
No. 7C	Gifts for Endowment	121,768.25
No. 8	Income for War Activities	550,872.75
No. 9	Withdrawals from Endowment Funds used as Income	19,396.47

\$4,252,110.35

EXPENDITURES

FROM JULY 1, 1918, TO JUNE 30, 1919

Schedules

No. 10	Administration	\$189,817.72	
No. 11	General Maintenance and Operation	264,284.71	
No. 12	Buildings, Improvements, Alterations, etc.	72,030.13	
No. 13	Education and Research	2,513,890.94	
No. 14	Scholarships, Fellowships and Prizes	40,234.00	
No. 15	Miscellaneous Expenditures not classi- fied	369,097.05	
No. 16	Payments to Beneficiaries of Trust Funds, etc.	9,221.70	
No. 17	Expenditures in connection with War Activities	469,913.34	
No. 18	Additions to Endowment Funds	135,486.54	
			\$4,063,976.13
No. 19	Expenditures prior to June 30, 1918, brought forward	\$542,509.98	
No. 19	Less Income prior to June 30, 1918, brought forward	121,766.17	
			420,743.81
No. 20	Income prior to June 30, 1919, carried forward		277,313.29
			\$4,762,033.23
No. 20	Less Expenditures prior to June 30, 1919, carried forward		546,076.51
			\$4,215,956.72
	Surplus for the year		36,153.63
			\$4,252,110.35

[Schedule No. 1]

INCOME FROM UNITED STATES

Adams Fund	\$15,000.00
Hatch Fund	15,000.00
Morrill Fund	50,000.00
Smith-Lever: Federal	48,631.09
	<hr/>
	\$128,631.09
	<hr/> <hr/>

[Schedule No. 2]

INCOME FROM STATE APPROPRIATIONS

Agriculture (General Support and Maintenance)	\$406,487.78
Citrus Experiment Station buildings	4,916.67
General Support	199,999.92
Insecticide and Fungicide Control	5,000.00
Medical School	49,999.92
Scripps Institution for Biological Research	12,499.92
Smith-Lever: State	32,547.38
Street Improvement—Berkeley	35.57
University Extension	34,999.92
University Farm—Animal Husbandry	4,852.95
University Farm—Sewerage and water system	3,562.27
University Farm—Small buildings	2,394.11
State Board of Education for Vocational Teacher Training (Smith-Hughes Act):	
Agriculture	\$7,820.19
Industrial	1,808.51
	<hr/> 9,628.70
State Board of Viticulture	2,482.74
State University Fund:	
For General Purposes	\$1,133,852.89
For Permanent Building Fund	85,250.00
For Scholarships	3,500.00
	<hr/> 1,222,602.89
State University Fund—Kelp Act	3,040.62
	<hr/>
	<hr/> \$1,995,051.36
	<hr/>

[Schedule No. 3]

STUDENTS' FEES AND DEPOSITS

Agriculture deposits	\$257.70
Anatomy fees	1,837.67
Astronomy fees	384.74
Biochemistry deposits	445.25
Botany fees	801.46
Changing Course fees	2,239.00
Chemistry deposits	18,039.49
Civil Engineering fees	2,964.45
Delayed Registration	685.00
Diploma fees	13.50
Drawing fees	24.00
Economics fees	1,403.50
Gymnasium fees	21,649.56
Gymnasium fines	1.00
Gymnasium suit fees—Men	12,242.69
Gymnasium suit fees—Women	8,637.24
History fees	1,147.48
Home Economics deposits	538.08
Home Economics fees	1,011.25
Hygiene deposits	80.43
Infirmery fees	34,833.14
Law Library fees	1,512.50
Library deposits	140.00
Mechanics deposits	2,007.96
Medical Appointment fees	59.00
Military Uniform fees	91.70
Mineralogy and Geology fees	297.75
Mining and Metallurgy deposits	501.48
Non-resident fees	9,146.13
Pathology and Bacteriology deposits	3,384.83
Physical Appointment fees	25.00
Physics deposits	9,277.32
Physiology deposits	846.70
Special Examination fees	552.00
Zoology deposits	1,364.50
Los Angeles Medical Department fees	830.00
Medical School fees and deposits	27,437.61
Dentistry fees and deposits	27,003.11
Dentistry—Special Students Deposit Account	144.35
<i>Carried forward</i>	\$193,858.57

[Schedule No. 3—Continued]

Forward	\$193,858.57
SUMMER SESSION AND INTERSESSION:	
Intersession, 1918	\$9,144.00
Intersession, 1919	150.00
Summer Session, 1918	10,776.96
Summer Session, 1919	52,935.85
Summer Session, Civil Engineering	1,880.00
Summer Session, Civil Engineering Commissary, 1918	113.85
Summer Session, Medical School, 1918	1,215.00
Summer Session, Los Angeles, 1918	11,880.41
Summer Session, Agriculture	274.00
	<hr/> 88,370.07
UNIVERSITY EXTENSION:	
University Extension	\$52,993.55
University Extension, Los Angeles	18,667.39
University Extension, Dentistry	99.85
	<hr/> 71,760.79
	<hr/> \$353,989.43
	<hr/>

[Schedule No. 4]

HOSPITALS, INFIRMARY, AND PROFESSIONAL COLLEGES

Hahnemann Hospital	\$42,485.87
Los Angeles Medical Department Dispensary	4,650.40
University Hospital	199,660.48
Dental Department (Infirmary)	20,618.37
University Hospital—Professional Fees Reserve	1,002.44
University Hospital—Radium Earnings Reserve	134.80
Students' Infirmary—Operations and dental work	9,302.94
	<hr/>
	\$277,855.30
	<hr/>

[Schedule No. 5]

DEPARTMENTAL SALES AND MISCELLANEOUS RECEIPTS

Agricultural:

Agriculture Extension	\$902.22	
Agriculture Director's	57.00	
Agronomy	87.82	
Chicken-pox Vaccine	4,854.04	
Citrus Experiment Station	5,361.71	
Dairy Certification, Alameda	1,023.92	
Dairy Certification, San Francisco	1,695.37	
Dairy	21,123.35	
Fertilizer Control	11,896.82	
Floriculture	202.47	
Forestry	10.00	
Hog Cholera Serum	36,149.11	
Imperial Valley	353.31	
Insecticide and Fungicide Registration	10.00	
Kearney Experiment Station	1,048.46	
Nutrition	1.21	
Official Advanced Registry Tests	15,907.03	
Soil Chemistry	16.17	
Soil Survey	141.65	
University Farm	205,956.26	
Veterinary	1,028.83	
Viticulture	221.19	
		\$308,047.94

Various:

Sale of Publications—Academy of Pacific Coast		
History	\$1.23	
Sale of History 1 Syllabi	513.50	
Sale of Brief Account of Lick Observatory	59.40	
Sale of Lick Observatory Publications	5.00	
Sale of publications	4,937.50	
Sale of syllabi	1,851.44	
Sale of "Tehtunis Papyri"	3.99	
Sale of Weinstock Lecture Publications	273.92	
Sale of "Zoe"	2.21	
Contribution to San Francisco Girls' Union		
Scholarship Income Account	5.40	
Printing Office profit	6,469.07	
Carried forward	\$14,122.66	\$308,047.94

[Schedule No. 5—Continued]

Forward	\$14,122.66	\$308,047.94
Rents (from general University property):		
Rabbitry	\$30.00	
Fish Experimental Laboratory.....	20.00	
Revenue Account	3,038.35	
Hooper	30.00	
	<hr/>	3,118.35
Storehouse profit		1,014.85
Administration overhead—Military units		11,690.30
Building Bonds Program Suspense a/c Refund..		68.60
Library exchange		281.30
Music and Drama		24,313.37
Overs and shorts		13.70
Scripps Institution—Rents and miscellaneous receipts		5,024.37
Sundry receipts and payments		25.38
Sale of manufactures—Wilmerding School		195.15
University Hospital furnishings—Refund		12.07
Interest on Radium Fund—University Hospital		274.22
Reimbursement for demolition of cottage		2,500.00
Miscellaneous		265.15
Library fines		809.50
Sales of wood, junk, old equipment, etc.		1,536.67
Interest on Infirmary notes		64.49
Interest on bank balances		1,957.51
Unclaimed checks		539.76
	<hr/>	67,827.40
		<hr/>
		\$375,875.34
		<hr/>

[Schedule No. 6]

INCOME FROM ENDOWMENT INVESTMENTS

Bond interest	\$72,464.20
Dividends on stock	10,459.00
Interest on Berkeley real estate investment	5,263.38
(Transfer from Permanent Building Fund—See Schedule No. 15.)	
Interest on Hooper Foundation expenditures	28,839.28
Interest on moneys not invested	2,706.82
Loan Fund interest	346.67
Mortgage interest	31,954.97
Rents	93,375.73
Kearney Vineyard income	34,234.63
	<hr/>
	\$279,644.68
	<hr/> <hr/>

For details of earnings distributed to individual funds, see
Balance Sheet, Schedule M.

[Schedule No. 7]

GIFTS

A. FOR CURRENT USE:

Fellowships:

E. I. DuPont de Nemours Company..	\$1,500.00	
Native Sons of the Golden West..	3,795.90	
		<u>\$5,295.90</u>

Lick Observatory:

Meeting at Brussels—W. H. Crocker \$4,000.00

Mills Expedition:

F. W. Bradley	1,000.00	
A. B. Spreckels	1,000.00	
W. H. Crocker	1,000.00	
Ogden Mills	1,000.00	
Geo. B. Douglas	1,000.00	
G. H. Blanding	1,000.00	
Ethel W. Crocker	1,000.00	
Ambrose Swasey	1,000.00	
Alumnus, U. C.	1,000.00	
Alex. Morrison	500.00	
Eclipse Expedition, 1914—Refund..	94.92	
		<u>13,594.92</u>

Scholarships:

Phoebe A. Hearst	\$2,400.00	
L. W. Jongeneel	125.00	
Wm. Watt Kerr—Medical Alumni..	310.00	
Presbyterian Church	150.00	
San Jose High School	125.00	
Social Economics—Y.M.C.A.	500.00	
Levi Strauss	3,500.00	
University Extension—Various	10.00	
Donald Williams	125.00	
		<u>7,245.00</u>

Scripps Institution for Biological

Research:

Maintenance—Ellen B. Scripps	\$9,000.00	
Buildings—Refund	67.06	
Special—E. W. Scripps	1,861.31	
		<u>10,928.37</u>

Various:

Anthropology—Phoebe A. Hearst....	\$2,100.00	
Bancroft Library—Doheney Foun- dation	600.00	
Chemistry—Union Oil Company	300.00	
Model of Homestake Mine—Phoebe A. Hearst	123.90	
Mining Department equipment— Phoebe A. Hearst	2,376.10	
Museum of Vertebrate Zoology— Miss Annie M. Alexander	21,260.00	

Carried forward\$26,760.00 \$37,064.19

[Schedule No. 7—Continued]

Forward	\$26,760.00	\$37,064.19	
Palaeontology—"A Friend"	3,800.00		
Pensions—Carnegie Foundation	24,404.89		
Prize—Newman Hall Association....	100.00		
Summer Session (Graphic Art)—			
Anonymous	100.00		
University Hospital—Mrs. E. A.			
Drexler	2,200.00		
		57,364.89	
			\$94,429.08

B. FOR BUILDINGS AND EQUIPMENT:

Stephens Memorial—Various	\$9,096.00		
Boalt Hall Subscription—E. J. McCutcheon	500.00		
University Hospital—Building and			
equipment—			
W. H. Crocker	\$22,500.00		
J. K. Moffitt	22,500.00		
		45,000.00	
			54,596.60
			\$149,025.68

C. FOR ENDOWMENT:

Alumni Association—			
For Alumni Association Life Membership Fund	\$20.00		
Estate of Horace W. Carpentier—			
For Horace W. Carpentier Endowment Fund..	75,000.00		
Class of 1919—			
For Class of 1919 Fund	2,000.00		
Estate of W. E. Furrey —			
For Furrey Endowment Fund	1,003.82		
Hindusthan Nalanda Club—			
For Hindusthanee Students Loan Fund	200.00		
Mrs. John L. Howard—			
For Bruce Howard Memorial Fund	10,000.00		
Elizabeth Patterson Mitchell—			
For George Ladd Scholarship Fund	27,074.43		
Sapiro, Neylan and Ehrlich—			
For Menorah Prize Fund	50.00		
F. W. Bradley—			
For Mining Students' Loan Fund	1,000.00		
Prytanean Society—			
For Prytanean Hospital Fund	50.00		
Various donors—			
For Ralph D. Robertson Memorial Loan Fund	320.00		
Hahnemann Hospital (transfer)—			
For Lucy M. Shaw Bequest	5,000.00		
Alumni of the Xi Psi Phi—E. J. Howard—			
For Xi Psi Phi Loan Fund	50.00		
		121,768.25	
			\$270,793.93

[Schedule No. 8]

INCOME FROM WAR ACTIVITIES

Aeronautics—Mess	\$114,378.07
Aeronautics—Settlement	31,724.50
Aeronautics—Tuition	113,907.27
Emergency Medical Expense	12,208.00
Gymnasium suits—Aeronautics	713.36
Naval Unit—Cot rent	217.40
Naval Unit—Housing income	2,625.75
Naval Unit—Settlement	1,183.01
Radio Electricians—Tuition	6,923.46
Scientific Research—State Council of Defense	11,223.35
Shipping Board School—Tuition	8,865.00
Students' Army Training Corps:	
Housing Income	\$21,904.51
Mess income	70,466.03
Settlement	120,192.12
	<hr/>
	212,562.66
Vocational Training and Radio Electrician Settlement	14,526.07
Vocational Training—Tuition	19,814.85
	<hr/>
	\$550,872.75
	<hr/>

[Schedule No. 9]

WITHDRAWALS FROM ENDOWMENT FUNDS USED AS INCOME

Class of 1909 Loan Fund	\$4.73
Wilmerding Endowment Fund	17,263.39
Jane K. Sather Campanile Fund	2,128.35

\$19,396.47

[Schedule No. 10]

ADMINISTRATION

Administration Assistance	\$14,157.16
Administration Printing	17,017.20
Advisors—Women	317.38
Alumni Association	2,121.26
Alumni Association—Bureau of Occupations	2,312.41
Alumni Association—Traveling	445.20
Auditing	2,539.41
Comptroller's Office—Assistance	41,700.04
Examination of schools	5,148.95
Expense	15,045.24
Postage	5,416.77
President's Contingent	3,000.00
Recorder's Office—Assistance	12,341.45
Salaries (Administrative)	54,844.76
Stationery	3,030.77
Telephone, telegraph and express	8,295.92
Traveling expenses of delegates to meetings	2,083.80
	<hr/>
	\$189,817.72

[Schedule No. 11]

GENERAL MAINTENANCE, OPERATION, ETC.

Affiliated Colleges—Repairs	\$1,007.24
Affiliated Colleges—Site	1,096.90
Affiliated Colleges—Watchmen	2,550.09
Armorsers	1,907.50
Fuel	472.35
Heat and light	70,551.46
Janitors	65,085.27
Repairs	12,483.81
Site	27,590.04
Water	10,936.40
Campanile Maintenance	260.72
Gymnasium Suits Maintenance—Men	1,563.69
Gymnasium Suits Maintenance—Women	6,017.08
Gymnasium Fees—Expenditures	11,832.60
Students' Infirmary	47,725.72
State Compensation Insurance	411.78
Interest on bank overdraft	85.24
Interest on Endowment moneys not invested	2,706.82
	<hr/>
	\$264,284.71
	<hr/>

[Schedule No. 12]

BUILDINGS, IMPROVEMENTS, ALTERATIONS, ETC.

In Berkeley:

Anatomy Building alterations	\$1,608.35	
Botany Annex—Heating installation	1,033.50	
California Hall—Lighting	84.10	
Campanile construction	2,128.35	
Carpenter Shop addition	1,610.35	
Civil Engineering Building—Heating system	3,306.85	
Filter Plant—Strawberry Canyon	602.05	
Gilman Hall furnishings	129.25	
Hearst Hall alterations	1,129.60	
High pressure steam line	4,837.09	
Hilgard Hall furnishings	101.50	
Hilgard Hall heating	119.05	
Lavatories—Various buildings	1,595.05	
Library furnishings .....	.60	
Permanent Building Fund contingencies	1,428.35	
Planting	3,094.85	
Printing Office equipment	7,000.00	
South Drive underground wiring	10,817.16	
South Hall alterations	1,621.65	
South Hall heating	133.60	
Street improvement, Berkeley	35.57	
University Library Building	827.57	
		<hr/> \$43,244.44

Not in Berkeley:

Hahnemann Hospital repairs	\$1,634.04	
Medical Building alterations	7,113.85	
Citrus Experiment Station—Buildings and im- provements	4,916.67	
Citrus Experiment Station—Irrigation installation	4,311.80	
University Farm—Animal Husbandry	4,852.95	
University Farm—Sewage and water system	3,562.27	
University Farm—Small buildings	2,394.11	
		<hr/> 28,785.69
		<hr/> \$72,030.13
		<hr/>

[Schedule No. 13]

EDUCATION AND RESEARCH

Various Departments at Berkeley:

Expenditures from General Funds	\$806,658.75	
Expenditures from Endowment income	51,268.36	
Expenditures from donations	28,163.22	
Expenditures from Morrill Fund	22,500.14	
Expenditures from fees, etc.	10,366.47	
		<hr/> \$918,956.94

Agricultural Departments:

Expenditures from Adams Fund	\$15,000.00	
Expenditures from Hatch Fund	15,000.00	
Expenditures from Endowment income	41,540.48	
Expenditures from Smith-Lever Fund—Federal	42,547.38	
Expenditures from Smith-Lever Fund—State....	32,547.38	
Expenditures from State appropriations	417,478.91	
Expenditures from Morrill Fund	27,499.86	
Expenditures from Departmental sales	5,779.96	
		<hr/> 597,393.97

Medical School and Hospitals:

University Hospital and Hahnemann

Hospital—

From General Funds	\$155,537.59	
From University Hospital earnings	199,660.48	
From Hahnemann Hospital earnings	42,485.87	
From Endowment income	10,567.59	
From donations	2,203.00	
		<hr/> \$410,454.53

Medical School—

From General Funds	\$107,778.67	
From State appropriations	49,999.92	
		<hr/> 157,778.59
		<hr/> 568,233.12

Dental Department:

From fees, deposits and Infirmary receipts	\$48,629.97	
From donations	25.00	
From Students' Special Deposit Account.....	561.59	
		<hr/> 49,216.56

Carried forward \$2,133,800.59

[Schedule No. 13—Continued]

Forward		\$2,133,800.59
Hooper Foundation—Medical research	\$43,510.28	
Hooper Foundation—Biological research	702.25	
		44,212.53
Lick Observatory:		
From General Funds	\$29,988.03	
From donations	10,121.47	
		40,109.50
Los Angeles Medical Department:		
From General Funds	\$10,080.00	
From fees	830.00	
From Dispensary receipts	5,319.48	
		16,229.48
University Extension:		
University Extension—Berkeley	\$64,950.52	
University Extension—Los Angeles	19,139.50	
State appropriation	34,999.92	
University Extension—Dentistry	170.35	
		119,260.29
Scripps Institution for Biological Research:		
From General Funds	\$5,000.00	
From rents and miscellaneous receipts	5,024.37	
From donations	8,903.29	
From State appropriation	12,499.92	
From State University Fund (Kelp Act)	3,040.62	
		34,468.20
Wilmerding School:		
From income on Endowment	\$24,212.39	
From withdrawal from Endowment Fund	10,211.71	
From sales of manufactures	195.15	
		34,619.25
Summer Session and Intersession:		
Intersession, 1918	\$6,699.93	
Summer Session, 1917	1.50	
Summer Session, 1918	52,849.92	
Summer Session, 1919	6,823.42	
Summer Session, Civil Engineering	1,422.07	
Summer Session—Los Angeles, 1918	19,213.52	
Summer Session—Los Angeles, 1919	3,465.64	
Summer Session—Medical School, 1918	715.10	
		91,191.10
		<u>\$2,513,890.94</u>

[Schedule No. 14]

DISBURSEMENTS FOR SCHOLARSHIPS, FELLOWSHIPS,
AND PRIZES

Joseph Bonnheim Scholarships	\$6,664.00
Edith J. Claypole Research Fellowship	1,200.00
P. Charles Cole Scholarship	125.00
Emily Chamberlain Cook Prize in Poetry	50.00
W. R. Davis Scholarships	610.00
John and Bertha Dolbeer Scholarships	810.00
Helen DuBois Scholarship	300.00
DuPont Fellowship	750.00
James M. Goewey Scholarship	600.00
Phoebe A. Hearst Scholarships	2,310.00
I. W. Hellman Scholarships	1,100.00
Cornelius B. Houghton Scholarship	200.00
Samuel C. Irving Prize	50.00
Albert Sydney Johnston Scholarship	120.00
Carrie M. Jones Scholarships	3,330.00
Martin Kellogg Fellowship	1,100.00
William Watt Kerr Scholarship	400.00
LeConte Memorial Fellowship	450.00
John W. Mackay, Jr., Fellowship	600.00
Newman Hall Essay Prize	100.00
Native Sons of the Golden West Fellowship	2,250.00
Paget Scholarship	125.00
Frank M. Pixley Scholarship	150.00
Richardson Latin Translation Prize	75.00
San Jose High School Scholarship	125.00
Sheffield Sanborn Scholarship	600.00
San Francisco Girls' Union Scholarship	280.00
State of California Scholarships	3,900.00
Horatio Stebbins Scholarship	250.00
Levi Strauss Scholarships	3,775.00
Swedish-American Patriotic League Scholarships	125.00
Bertha Henicke Taussig Memorial Scholarships	500.00
Willard Thompson Memorial Scholarships	3,000.00
University Fellowships	3,800.00
University Medal	135.00
Whiting Fellowship	150.00
Donald Williams Scholarship	125.00
	<u>\$40,234.00</u>

[Schedule No. 15]

MISCELLANEOUS EXPENDITURES NOT CLASSIFIED

From Departmental Sales and Miscellaneous Receipts:

Agricultural:

Chicken-pox vaccine sales	\$1,001.49
Dairy sales	19,493.03
Dairy Certification—Alameda	1,175.06
Dairy Certification—San Francisco	1,893.08
Fertilizer Control	6,745.17
Hog serum sales	35,734.00
Insecticide and fungicide regis- trations	2.41
Official advanced registry tests....	14,591.78
University Farm income	205,703.27
Veterinary sales	1,251.94

 \$287,591.23

Music and Drama	24,484.57
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 \$312,075.80

Various:

Horgan Bequest expenses	\$217.22
Scripps Institution—Sale of Agassiz (protest fees)	84.20
Stephens Memorial expenses	2,589.59
University Hospital Building and Equipment Suspense Account—Interest on overdraft.....	3,846.75
University Hospital—Nurses' residence (fees paid to consultants)	2,505.90
Pensions—Carnegie Foundation	24,404.57
Retiring allowances	1,489.20
Military uniforms—Payments on contract not reimbursed by United States	3,266.50
Interest on Berkeley real estate investment (Transfer from Permanent Building Fund to Endowment Income to make income equal to 5 per cent on the valuation of \$133,405.68)....	5,263.38
Interest on Olney notes (\$45,000)—Purchase of property at Telegraph Ave. and Allston way, Berkeley	2,700.00
Boalt Hall Subscriptions (Transfer of donation to apply on Subscription Account)	500.00
Jane K. Sather Fund for Campanile and Bells (to adjust amount included in Schedule No. 15 of 1917-18 report as Income prior to June 30, 1918, carried forward)	10,145.33
Miscellaneous—Revenue account	8.61

 57,021.25

 \$369,097.05

[Schedule No. 16]

PAYMENTS TO BENEFICIARIES OF TRUST FUNDS, ETC.

Payments to Secretaries:

Alumni Y.W.C.A. of University of California	\$30.00	
Class of 1909 Endowment	61.45	
Class of 1909 Loan	12.37	
Young Women's Christian Association	334.78	
	<hr/>	\$438.60

Direct Charges Against Income on Funds:

H. W. Carpentier Endowment (legal expense).....	\$2.46	
Cora Jane Flood Endowment (water bills—Bear Gulch Water Co.)	3,456.90	
Furrey Endowment (taxes)	13.04	
Hilgard Fund (repairs)	133.10	
Kraft Scholarship (legal expenses)	4.25	
Palache Endowment (legal expenses)	73.35	
	<hr/>	3,683.10

Annuities:

Hilgard Fund (Alice Rose Hilgard)	\$2,400.00	
Howison Fund (Lois T. Howison)	2,700.00	
	<hr/>	5,100.00
		<hr/>
		\$9,221.70
		<hr/>

[Schedule No. 17]

EXPENDITURES IN CONNECTION WITH WAR ACTIVITIES

Aeronautics	\$97,287.86
Aeronautics Mess	80,231.43
Emergency Medical Expense	12,208.00
Gymnasium suits—Aeronautics	28.00
Military Information	4,033.78
Military Stores	235.36
Naval Architecture	520.25
Naval Preparation	245.00
Naval Unit	4,026.16
Radio Communication	238.00
Radio Electricians	11,042.33
Radio—Building barracks and latrine	12,284.42
Reconstruction apparatus	650.00
Scientific research	11,223.35
Shipping Board Course	5,458.40
Students' Army Training Corps—	
Administration	6,696.24
Barracks maintenance	14,445.60
Buildings	125,934.79
Heating plant maintenance	2,730.97
Mess	62,519.70
Vocational Training	17,473.70
Publication of Roll of Honor	400.00
	<hr/>
	\$469,913.34
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[Schedule No. 18]

ADDITIONS TO ENDOWMENT FUNDS

Gifts for Endowment as per Schedule 7c \$121,768.25
 Income from Investments added to Funds:

Alumni Hall Fund	\$721.94
Associated Women Students Fund	67.46
Class of 1881 Loan Fund	37.05
Class of 1886 Loan Fund	166.06
Class of 1895 Loan Fund	16.09
Class of 1897 Loan Fund	25.88
Class of 1898 Loan Fund	9.61
Class of 1903 Loan Fund	98.47
Class of 1908 Loan Fund	11.76
Edith Claypole Memorial Research Fund	281.80
P. Chas. Cole Scholarship Fund	31.13
Emily Chamberlain Cook Prize Fund	77.20
E. A. Denicke Loan Fund	387.95
Dental Endowment Fund	392.15
F. W. Dohrmann Memorial Loan Fund	176.00
Grubstake "W" Loan Fund	9.11
Hindusthanee Students' Loan Fund .....	.41
Loan Fund No. 3	2.05
Medal Loan Fund	4.24
Memorial Gift Fund—Class of 1916	154.72
Men's Dormitory Fund	30.71
Mining Students' Loan Fund	153.58
Nalanda Loan Fund	1.02
Napa Seminary Loan Fund	18.34
Prytanean Fund—Students' Union	23.01
Prytanean Fund—Housing	72.52
Prytanean Fund—Hospital	14.11
Ralph D. Robertson Memorial Loan Fund .....	.56
Royer Endowment Fund	305.74
San Joaquin Women's Club Loan Fund	4.32
Jane K. Sather Classical Chair Fund	2,944.06
Jane K. Sather Historical Chair Fund	1,886.10
Jane K. Sather Fund (awaiting distribution)	2,971.70
Snell Seminary Memorial Loan Fund	1.16
Special Senior Class Loan Fund	9.66
Students' Coöperative Society Fund	603.07
Walcott Loan Fund	22.29
F. J. Walton Memorial Loan Fund	466.40
Whiting Fund	1,350.00
Women's Dormitory Fund	162.99
Xi Psi Phi Loan Fund	5.87

 13,718.29

 \$135,486.54

[Schedule No. 19]

INCOME AND EXPENDITURES PRIOR TO JUNE 30, 1918,
CARRIED FORWARD

Income:

Fund interests accounts	\$38,248.67	
Scholarships and prizes	483.05	
Donations	72,889.12	
Jane K. Sather Fund for Campanile	10,145.33	
		<hr/> \$121,766.17

Expenditures:

Agricultural Department sales	\$35,841.24	
Construction	94,246.03	
Hooper Foundation Research expenses	176,888.41	
University Hospital Building Fund	203,870.19	
Miscellaneous	31,664.11	
		<hr/> 542,509.98

Excess Expenditures over Income	\$420,743.81
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[Schedule No. 20]

INCOME AND EXPENDITURES PRIOR TO JUNE 30, 1919
CARRIED FORWARD

Income:

Fund Income Accounts—

Balance Sheet, Schedule "N"	\$56,098.09	
Balance Sheet, Schedule "Q"	2,047.12	
		\$58,145.21

Donation Accounts—Balance Sheet, Schedule "O"		46,714.35
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Balances for Specific Purposes—

Balance Sheet, Schedule "P"	\$158,514.50	
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Less Bond interest	\$24,922.50	
Mortgage interest undistributed	2,711.93	
Doctor's thesis deposit	350.00	
Key deposits	465.03	
Dentistry fees and deposits	535.00	
Infirmery operations and dental work	8,651.29	
Plan deposits	243.00	
		37,878.75

Permanent Building Fund		120,635.75
		51,817.98

\$277,313.29

Expenditures:

Departmental and other Expenses carried forward as per Balance Sheet, Schedule "H" ..	\$340,294.65	
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Less Summer Sessin Civil Engineer-

ing Commissary	\$120.69	
Hotel Rafael maintenance	12,041.36	
Radium Fund	7,570.21	
Suspense Account—Commission on lease, Oakland	13,301.50	
Suspense Account—Commission on lease, Sutter Street, S. F. ..	1,093.50	
Suspense Account—Commission on lease, Sutter Street, S. F. ..	2,794.50	
Expenditure Account, 1919-20 Appropriations	13,023.95	
		49,945.71

\$290,348.94

Vocational Education—Federal Board	15.30	
University Hospital stores	34,454.13	
Federal Council of Defense	187.20	
Hooper Foundation—Advances for maintenance of laboratory	221,070.94	

\$546,076.51

STATISTICS OF THE INFIRMARY

COMPILED BY THE UNIVERSITY PHYSICIAN

INFIRMARY SUMMARIES

September 27, 1918—June 4, 1919

DISPENSARY

	Men	Women	Total
Individuals treated	1,321	2,196	3,517
Number of treatments	7,615	10,707	18,322
Number of diagnoses	2,058	2,659	4,617
Number of smallpox vaccinations	362	411	773
Number of students entitled to treatment during year			7,014
Number of days open			251
Average number of patients treated daily			71.0
Average number treatments per patient			5.0
Percentage of students treated			50%

HOUSE PATIENTS

Discharged—	Men	Women	Total
Well	321	203	524
Relieved	64	40	104
Not relieved	1	2	3
Deceased	2	2	4
Total number of Infirmary days			2,917
Number of days open			251
Total number of diagnoses			657
Total number of individuals			635
Students in Infirmary more than once during year			69
Average stay in days			5.8
Average number of patients per day			11.6
Largest number of patients in one day			40
Surgical cases			102
Operations			93
Anaesthesia (general)			45
Patients examined by X-ray			141
Prescriptions			177
Laboratory reports—			
Urine analyses			1,080
Throat cultures			538
Sputum			77
Blood counts			503
Feces			19
Stomach contents			5
Urethral and prostatic smears			10
Wassermanns			20
Miscellaneous			43

DENTAL DEPARTMENT

May 16, 1918—June 4, 1919

Gold Fillings—Inlay	125
Gold Fillings—Malletted	10
Amalgam Fillings	1,282
Synthetic Fillings	350
Cement Fillings	10
Temporary Fillings	8
Prophylaxis	475
Extractions	150
Root Canal Fillings	36
Putrescent Pulp Abscess	5
X-rays	274
Pulp Removals	40
Treatments (miscellaneous)	204
Pulp Capping	18
Root Amputations	6
Removal, impacted molars	9
Reset	8
Wisdom Teeth, gum lanced	35
Abscess Lancing	8
Broken Appointments	56

INFIRMARY REPORT, 1918-19

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
I. GENERAL DISEASES:						
(International Classification)						
4. Malaria	1	1	2	.....	1	1
7. Scarlet fever .....	.....	.....	.....	1	1	2
9. Diphtheria and Croup—						
Diphtheria	2	28	30	3	35	38
10. Influenza	9	163	172	14	181	195
18. Erysipelas .....	.....	.....	.....	.....	1	1
19. Other epidemic diseases—						
Chicken pox .....	.....	1	1	.....	3	3
Mumps	3	4	7	7	2	9
Vaccination:						
Vaccinia	69	217	286	.....	.....	.....
Vaccinoid	13	34	47	.....	.....	.....
Reaction of immunity	2	27	29	.....	.....	.....
28. Tuberculosis of the lungs	2	4	6	.....	3	3
36. Rickets—						
(c) Curvature of the spine—						
Scoliosis	1	.....	1	.....	.....	.....
Kyphosis	1	.....	1	.....	.....	.....
37. Syphilis	1	.....	1	.....	.....	.....
38. Gonococcus infection—						
(b) Gonococcus infection of—						
Urethra	2	.....	2	.....	.....	.....
45. Cancer and other malignant tumors						
of other organs—						
(c) Epithelioma of face	1	.....	1	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
46. Other tumors—						
Tumor of—						
Chin				1		1
Ear	1		1			
Forearm	1		1			
Uterus					1	1
Cyst—						
Papilloma—lip	1		1			
Sebaceous	5	5	10		2	2
Popliteal	1		1			
48. Chronic rheumatism and gout—						
(a) Arthritis		1	1			
(b) Rheumatism, chronic	2	1	3			
50. Diabetes—						
Diabetes mellitus				1		1
Glycosuria, acute		1	1	1	1	2
51. Exophthalmic goitre		3	3			
54. Anemia		7	7			
55. Other general diseases—						
Diabetes insipidus					1	1
II. DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE:						
66. Paralysis without specified cause—						
Paralysis of finger	1		1			
68. Other forms of mental alienation—						
Dementia praecox	1	2	3			
Mania depressive		1	1			
Psychastenia		1	1			
69. Epilepsy		2	2			
73. Neuralgia and neuritis—						
Hysteria	1		1			
Neuralgia	1	7	8			
Neuritis	3	3	6			
74. Other diseases of the nervous system—						
Anemia of brain (syncope).....	1	1	2		1	1
Hiccough	3		3			
Neurasthenia	13	7	20	1	10	11
Vertigo		2	2			
75. Diseases of the eyes and their annexa—						
(a) Conjunctivitis—						
Acute	35	21	56		1	1
Chronic	6	1	7			
Phlyctenular	3		3			
(c) Other diseases of the eyes and their annexa—						
Astigmatism—						
Simple hyperopic	8	11	19			
Compound hyperopic	4	5	9			

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Simple myopic	5	4	9	.....	.....	.....
Compound myopic	9	4	13	.....	.....	.....
Blepharitis	2	4	6	.....	.....	.....
Chalazion	2	.....	2	.....	.....	.....
Foreign body	4	4	8	.....	.....	.....
Hordeolum	14	22	36	.....	1	1
Operation of .....	.....	.....	.....	1	.....	1
Hyperopia	2	.....	2	.....	.....	.....
Myopia	2	2	4	.....	.....	.....
76. Diseases of the ears—						
Cerumen, accumulation of	29	35	64	.....	.....	.....
Catarrh of Eustachian tube	1	.....	1	.....	.....	.....
Eustachian salpingitis	2	4	6	.....	.....	.....
Haematoma of ear	6	.....	6	.....	.....	.....
Otis media, acute	24	4	28	3	2	5
Otitis media, chronic	1	1	2	.....	.....	.....
III. DISEASES OF THE CIRCULATORY						
SYSTEM:						
78. Endocarditis—						
Chronic endocarditis .....	.....	.....	.....	.....	1	1
Myocarditis, acute .....	.....	7	7	.....	3	3
79. Organic diseases of the heart—						
(a) Valvular diseases	1	.....	1	.....	.....	.....
(b) Endocarditis, chronic .....	.....	1	1	.....	.....	.....
(c) Dilatation, acute cardiac .....	.....	2	2	.....	.....	.....
Mitral insufficiency	1	.....	1	.....	.....	.....
Myocarditis, chronic .....	.....	1	1	.....	6	6
83. Diseases of the veins—						
Haemorrhoids	10	5	15	1	1	2
Varicocele	2	.....	2	.....	.....	.....
84. Diseases of the lymphatic system—						
Adenitis axillary	2	1	3	.....	.....	.....
Cervical	6	8	14	.....	1	1
Inguinal	2	.....	2	.....	.....	.....
Lymphadenitis	1	2	3	.....	.....	.....
85. Haemorrhage—						
Bradycardia .....	.....	2	2	.....	.....	.....
Epistaxis	3	.....	3	.....	.....	.....
Haemorrhage .....	.....	.....	.....	1	.....	1
IV. DISEASES OF THE RESPIRATORY						
SYSTEM:						
86. Diseases of the nasal fossae—						
Adenoids .....	.....	.....	.....	1	.....	1
Deviated Septum	3	.....	3	.....	1	1
Turbinate, operation for	3	.....	3	.....	1	1
Submucous, operation for .....	.....	1	1	.....	1	1
Polypus, operation for .....	.....	.....	.....	1	.....	1
Spur, operation for	1	.....	1	.....	1	1
Rhinitis, acute	304	427	731	4	5	9
Rhinitis, chronic	3	2	5	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
87. Diseases of the larynx—						
Laryngitis	24	35	59	1	3	4
88. Diseases of the thyroid body—						
Goitre .....	.....	1	1	.....	.....	.....
Hyperthyroidism .....	.....	9	9	.....	.....	.....
89. Acute bronchitis—						
Bronchitis, acute	3	3	6	1	2	3
Tracheitis	49	72	121	37	12	49
92. Pneumonia—						
Pneumonia, lobar	1	1	2	2	13	15
93. Pleurisy	3	3	6	1	3	4
96. Asthma	1	3	4	1	.....	1
98. Other diseases of the respiratory system—						
Hay fever .....	.....	3	3	.....	.....	.....
V. DISEASES OF THE DIGESTIVE SYSTEM:						
99. Diseases of the mouth and annexe—						
(a) Diseases of the teeth and gums—						
Gingivitis .....	.....	1	1	.....	.....	.....
(b) Other diseases of the mouth and annexe—						
Stomatitis	7	7	14	.....	.....	.....
Ulcer of mouth .....	.....	1	1	.....	.....	.....
Abscess alveolar .....	.....	.....	.....	1	.....	1
100. Diseases of the pharynx—						
Abscess tonsillar .....	.....	.....	.....	.....	1	1
Amygdalitis, acute	67	60	127	3	14	17
Amygdalitis, operation for	16	13	29	17	30	47
Hypertrophy of tonsils .....	.....	3	3	3	.....	3
Pharyngitis, acute	259	304	563	61	19	80
Pharyngitis, chronic .....	.....	4	4	.....	.....	.....
103. Other diseases of the stomach—						
Fermentation, gastric	11	6	17	.....	1	1
Gastritis	2	2	4	2	.....	2
Gastrotropis .....	.....	4	4	.....	1	1
Visceroptosis .....	.....	.....	.....	.....	1	1
105. Diarrhoea and enteritis—						
Duodenitis .....	.....	1	1	.....	1	1
Enteritis	5	3	8	5	.....	5
Fermentation, intestinal	2	3	5	.....	.....	.....
Gastroduodenitis	4	3	7	.....	.....	.....
Gastroenteritis	3	3	6	.....	.....	.....
108. Appendicitis—						
Appendicitis, acute	1	7	8	.....	7	7
Appendicitis, chronic	2	3	5	.....	.....	.....
Appendicitis, operation for .....	.....	.....	.....	.....	3	3
109. Hernias—						
Hernia, inguinal	4	1	5	2	1	3

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
110. Diseases of the intestines—						
(a) Diseases of the anus and faecal fistulas—						
Enteroptosis .....	.....	1	1	.....	.....	.....
(b) Other diseases of the intestines—						
Constipation	22	35	57	2	1	3
Neurosis of stomach .....	.....	.....	.....	.....	1	1
111. Acute yellow atrophy of the liver—						
Jaundice, catarrhal	3	2	5	1	.....	1
117. Simple peritonitis—						
Abdominal adhesions .....	.....	1	1	.....	.....	.....
Adhesions of peritoneum .....	.....	1	1	.....	.....	.....

VI. NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ANNEXA:

119. Acute nephritis .....	.....	.....	.....	1	.....	1
122. Other diseases of the kidneys and annexa—						
Haematuria	1	.....	1	.....	.....	.....
123. Calculi of the urinary passages—						
Calculus in bladder	1	.....	1	.....	.....	.....
124. Diseases of the bladder—						
Cystitis, acute	2	2	4	.....	.....	.....
125. Diseases of the urethra—						
Urethritis	4	.....	4	.....	.....	.....
126. Diseases of the prostate—						
Prostatitis, sub-acute	1	.....	1	.....	.....	.....
127. Non-venereal diseases of the male genital organs—						
Phimosis	1	.....	1	.....	.....	.....
Phimosis, operation for .....	.....	.....	.....	3	.....	3
Seminal emissions	1	.....	1	.....	.....	.....
Spermatorrhea	1	.....	1	.....	.....	.....
128. Uterine haemorrhage—						
Menorrhagia .....	.....	3	3	.....	.....	.....
Metorrhagia .....	.....	2	2	.....	.....	.....
130. Other diseases of the uterus—						
(a) Endometritis .....	.....	.....	.....	.....	3	3
(b) Other diseases of the uterus—						
Amenorrhoea .....	.....	23	23	.....	1	1
Cervicitis .....	.....	1	1	.....	.....	.....
Dysmenorrhoea .....	.....	17	17	.....	4	4
Retroversion of uterus .....	.....	2	2	.....	.....	.....

VII. THE PUERPERAL STATE:

134. Accidents of pregnancy—						
(a) Pregnancy, normal .....	.....	1	1	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
VIII. DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE:						
143. Furuncle of—						
Abdomen	2	.....	2	.....	.....	.....
Arm	3	2	5	.....	.....	.....
Axilla .....	.....	3	3	.....	.....	.....
Back	2	1	3	.....	.....	.....
Brow .....	.....	.....	.....	1	.....	1
Buttock	2	.....	2	.....	.....	.....
Chest .....	.....	1	1	.....	.....	.....
Chin	3	8	11	.....	.....	.....
Ear	5	3	8	1	.....	1
Elbow .....	.....	1	1	.....	.....	.....
Eustachian tube .....	.....	1	1	.....	.....	.....
Eye	2	1	3	.....	.....	.....
Eyebrow	1	.....	1	.....	.....	.....
Eyelid .....	.....	1	1	.....	.....	.....
Face	21	21	42	3	2	5
Forearm	2	.....	2	.....	.....	.....
Forehead .....	.....	1	1	.....	.....	.....
Hand	2	.....	2	.....	.....	.....
Head	3	1	4	.....	.....	.....
Heel .....	.....	1	1	.....	.....	.....
Hip	1	.....	1	1	.....	1
Knee	1	.....	1	.....	.....	.....
Leg	6	2	8	.....	.....	.....
Lip .....	.....	2	2	.....	.....	.....
Mouth	1	.....	1	.....	.....	.....
Neck	33	6	39	.....	.....	.....
Nose	1	6	7	.....	.....	.....
Scalp	1	.....	1	.....	.....	.....
Shoulder	4	.....	4	.....	.....	.....
Thigh	4	.....	4	.....	.....	.....
Toe	1	.....	1	.....	.....	.....
144. Acute abscess—						
Abscess of—						
Arm	3	.....	3	.....	.....	.....
Face	1	.....	1	.....	.....	.....
Finger .....	.....	5	5	.....	.....	.....
Foot .....	.....	1	1	.....	.....	.....
Heel .....	.....	1	1	.....	.....	.....
Leg .....	.....	1	1	.....	.....	.....
Thigh	1	.....	1	.....	.....	.....
Thumb	3	.....	3	.....	.....	.....
Toe	6	1	7	.....	.....	.....
Cellulitis of—						
Arm	1	.....	1	1	.....	1
Back .....	.....	1	1	.....	.....	.....
Eyebrow .....	.....	.....	.....	1	.....	1
Face	1	.....	1	.....	.....	.....
Finger	3	8	11	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Foot	3	6	9	.....	.....	.....
Hand	1	.....	1	.....	.....	.....
Heel	2	3	5	.....	1	1
Leg .....	.....	.....	.....	.....	1	1
Knee	2	.....	2	3	.....	3
Thumb	2	.....	2	.....	.....	.....
Toe	1	1	2	.....	1	1
145. Other diseases of the skin and annexa—						
(a) Trichophytosis	50	3	53	.....	.....	.....
(b) Scabies	17	9	26	.....	.....	.....
(c) Other diseases of the skin and annexa—						
Acne	21	36	57	.....	.....	.....
Alopecia	1	1	2	.....	.....	.....
Clavus	5	11	16	.....	.....	.....
Comedo .....	.....	2	2	.....	.....	.....
Dermatitis venenata	65	105	170	3	5	8
Eczema	40	21	61	.....	.....	.....
Erthyema multiforme .....	.....	2	2	.....	.....	.....
Fissure toe	1	.....	1	.....	.....	.....
Folliculitis .....	.....	1	1	.....	.....	.....
Herpes	7	5	12	.....	.....	.....
Herpes zoster	3	10	13	.....	.....	.....
Hyperidrosis	1	2	3	.....	.....	.....
Impetigo contagiosa	27	10	37	.....	.....	.....
Parasitic diseases—						
Pernio	1	7	8	.....	.....	.....
Pityriasis rosea	4	3	7	.....	.....	.....
Pruritis	1	.....	1	.....	.....	.....
Psoriasis	1	2	3	.....	.....	.....
Seborrhoea	2	39	41	.....	1	1
Urticaria	12	23	35	.....	.....	.....
Wart of—						
Arm	1	.....	1	.....	.....	.....
Chin	1	.....	1	.....	.....	.....
Eyelid .....	.....	1	1	.....	.....	.....
Foot	36	13	49	.....	.....	.....
Forehead	1	.....	1	.....	.....	.....
Hands	8	15	23	.....	.....	.....
Neck .....	.....	1	1	.....	.....	.....
Penis	1	.....	1	.....	.....	.....
Nails—						
Ingrowing nail	7	2	9	.....	.....	.....
Onychia .....	.....	.....	.....	.....	.....	.....
Paronychia	5	15	20	.....	.....	.....
Blister of—						
Foot	2	.....	2	.....	.....	.....
Hand .....	.....	1	1	.....	.....	.....
Heel	2	1	3	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
IX. DISEASES OF THE BONES AND OF THE ORGANS OF LOCOMOTION:						
146. Diseases of the bones—						
Exostosis	1	.....	1	.....	.....	.....
Frontal sinusitis	3	.....	3	.....	.....	.....
Mastoiditis, acute .....	.....	.....	.....	.....	1	1
Osteomyelitis, chronic	1	.....	1	.....	.....	.....
Sinusitis, chronic .....	.....	1	1	.....	1	1
Periostitis, tibia	1	.....	1	.....	.....	.....
Periostitis, heel	1	.....	1	.....	.....	.....
147. Diseases of the joints—						
Arthritis	6	8	14	.....	.....	.....
Synovitis	5	2	7	.....	1	1
149. Other diseases of the organs of locomotion—						
Pronated feet	1	5	6	.....	.....	.....
Bursitis	2	.....	2	.....	.....	.....
Chondritis	1	.....	1	.....	.....	.....
Faulty statics .....	.....	2	2	.....	.....	.....
Flat anterior arch	2	11	13	.....	.....	.....
Ganglion	2	5	7	.....	.....	.....
Hallux valgus	1	.....	1	.....	.....	.....
Hammer toe	1	1	2	1	1	2
Lumbago .....	.....	.....	.....	1	.....	1
Metatarsalgia	2	1	3	.....	.....	.....
Myalgia	1	.....	1	.....	.....	.....
Myositis	3	2	5	.....	.....	.....
Pes planus	10	19	29	.....	.....	.....
Tenosynovitis	6	9	15	.....	.....	.....
Torticollis	2	7	9	.....	.....	.....
X. MALFORMATIONS:						
150. Congenital malformations—						
Naevus .....	.....	2	2	.....	1	1
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES:						
164. Poisoning by food	1	1	2	.....	.....	.....
165. Other acute poisonings—						
(a) Venomous bites and stings—						
Insect sting	2	5	7	.....	.....	.....
167. Burns—						
Burn of—						
Abdomen .....	.....	1	1	.....	.....	.....
Arms	2	.....	2	1	.....	1
Back .....	.....	1	1	.....	.....	.....
Chin .....	.....	1	1	.....	.....	.....
Ear .....	.....	1	1	.....	.....	.....
Eye	1	.....	1	.....	.....	.....
Face	1	1	2	.....	.....	.....
Fingers .....	.....	5	5	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Foot	1	2	3	.....	.....	.....
Hand	6	2	8	.....	.....	.....
Heel .....	.....	1	1	.....	.....	.....
Knee .....	.....	1	1	.....	.....	.....
Mouth	1	1	2	.....	.....	.....
Neck .....	.....	2	2	.....	.....	.....
Leg	3	.....	3	1	.....	1
Scrotum	1	.....	1	.....	.....	.....
Wrist	1	.....	1	.....	.....	.....
171. Traumatism by cutting or piercing instruments—						
Laceration of—						
Back	1	.....	1	.....	.....	.....
Chin	1	1	2	.....	.....	.....
Ear .....	.....	1	1	.....	.....	.....
Elbow	1	.....	1	.....	.....	.....
Eye	1	.....	1	.....	.....	.....
Face .....	.....	1	1	.....	.....	.....
Finger	23	15	38	.....	.....	.....
Foot .....	.....	1	1	.....	.....	.....
Forehead	1	.....	1	.....	.....	.....
Hand	10	1	11	2	.....	2
Head .....	.....	.....	.....	1	.....	1
Leg	1	.....	1	.....	.....	.....
Nose	1	.....	1	1	.....	1
Palm	1	.....	1	.....	.....	.....
Plantar .....	.....	.....	.....	1	.....	1
Scalp	1	1	2	1	.....	1
Penis	1	.....	1	.....	.....	.....
Thumb .....	.....	2	2	.....	.....	.....
Toe	1	.....	1	.....	.....	.....
Wrist .....	.....	1	1	.....	.....	.....
185. Fractures—						
(a) Dislocation of—						
Finger	1	.....	1	.....	.....	.....
Foot	1	.....	1	.....	.....	.....
Knee	1	.....	1	1	.....	1
Nose	2	.....	2	.....	.....	.....
Shoulder	2	1	3	.....	.....	.....
Rib	1	.....	1	.....	.....	.....
(b) Sprains—						
Sprains of—						
Achilles tendon .....	.....	1	1	.....	.....	.....
Ankle	28	37	65	1	4	5
Arch	1	.....	1	.....	.....	.....
Arm .....	.....	1	1	.....	.....	.....
Elbow joint .....	.....	1	1	.....	.....	.....
Back	1	.....	1	1	.....	1
Fibula .....	.....	1	1	.....	.....	.....
Finger	3	4	7	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Foot	5	3	8	1	.....	1
Knee	6	6	12	.....	.....	.....
Hand .....	.....	1	1	.....	.....	.....
Neck	2	.....	2	.....	.....	.....
Sacro-iliac .....	.....	1	1	.....	.....	.....
Shoulder	2	2	4	.....	.....	.....
Thigh	1	.....	1	.....	.....	.....
Thumb	9	2	11	.....	.....	.....
Toe	3	.....	3	1	.....	1
Wrist	3	1	4	.....	.....	.....
(c) Fractures—						
Fracture of—						
Ankle .....	.....	.....	.....	2	.....	2
Fibula	1	1	2	.....	2	2
Finger	2	.....	2	.....	.....	.....
Hand .....	.....	1	1	.....	.....	.....
Nose	1	.....	1	.....	.....	.....
Radius—Colles fracture .....	.....	1	1	1	.....	1
Scaphoid .....	.....	.....	.....	1	.....	1
Ulna	1	.....	1	.....	.....	.....
186. Other external violence—						
I. Strain of muscle of—						
Abdomen	1	.....	1	.....	.....	.....
Achilles tendon .....	.....	4	4	.....	.....	.....
Ankle .....	.....	3	3	.....	.....	.....
Arch	3	8	11	.....	.....	.....
Back	6	17	23	.....	.....	.....
Chest	4	.....	4	.....	.....	.....
Finger	1	.....	1	.....	.....	.....
Foot	2	6	8	.....	.....	.....
Hand	1	.....	1	.....	.....	.....
Heel .....	.....	2	2	.....	.....	.....
Knee	2	4	6	.....	.....	.....
Leg	2	1	3	.....	.....	.....
Neck	1	.....	1	.....	.....	.....
Sacro-iliac	6	9	15	1	.....	1
Throat	1	.....	1	.....	.....	.....
Shoulder	1	1	2	.....	.....	.....
Thigh	1	.....	1	.....	.....	.....
Thumb	2	.....	2	.....	.....	.....
Toe	2	.....	2	.....	.....	.....
Wrist	3	1	4	.....	.....	.....
II. Regions—						
Contusions and abrasions of—						
Abdomen	1	.....	1	.....	.....	.....
Ankle	2	.....	2	.....	.....	.....
Arm	6	1	7	1	1	2
Back .....	.....	1	1	.....	.....	.....
Buttock	1	.....	1	.....	.....	.....
Chest	11	.....	11	.....	.....	.....

INFIRMARY REPORT, 1918-19—(Concluded)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Chin	1	.....	1	.....	.....	.....
Ear	4	.....	4	.....	.....	.....
Elbow	19	2	21	1	.....	1
Eyebrow	1	.....	1	.....	.....	.....
Eyelid	1	.....	1	.....	.....	.....
Face	2	.....	2	.....	.....	.....
Finger	17	12	29	.....	.....	.....
Foot	10	6	16	.....	.....	.....
Forefinger .....	.....	1	1	.....	.....	.....
Forehead	1	.....	1	.....	.....	.....
Hand	12	2	14	.....	.....	.....
Head	8	.....	3	.....	.....	.....
Heel	11	25	36	.....	.....	.....
Hip	1	.....	1	.....	.....	.....
Jaw	1	.....	1	.....	.....	.....
Knee	28	6	34	1	.....	1
Knuckles	1	.....	1	.....	.....	.....
Leg	12	1	13	1	1	2
Neck	1	.....	1	.....	.....	.....
Nose	8	.....	8	1	.....	1
Rib	3	.....	3	.....	.....	.....
Scalp	1	.....	1	.....	.....	.....
Shoulder	7	.....	7	.....	.....	.....
Side .....	.....	1	1	.....	.....	.....
Shank	1	.....	1	.....	.....	.....
Thigh	1	.....	1	.....	.....	.....
Thumb	3	1	4	.....	.....	.....
Wrist	3	.....	3	.....	.....	.....
Toe	12	.....	12	.....	.....	.....
186. Foreign body of—						
Arm	1	.....	1	.....	.....	.....
Ear .....	.....	1	1	.....	.....	.....
Finger	2	6	8	.....	.....	.....
Foot	3	1	4	.....	.....	.....
Eye .....	.....	1	1	.....	.....	.....
Hand	1	.....	1	.....	.....	.....
Lip .....	.....	1	1	.....	.....	.....
Throat .....	.....	.....	.....	1	.....	1
XIV. ILL-DEFINED DISEASES:						
189. Unclassified or ill-defined—						
(a) Headache	4	13	17	1	1	2
Insomnia	1	.....	1	.....	.....	.....
(b) No disease	26	64	90	1	22	23

STATISTICAL ADDENDA

COMPILED BY THE RECORDER OF THE FACULTIES

TABLE 1.—Summaries of officers of instruction in the colleges at Berkeley, 1899–1919.

Year	Professors		Assoc. Profs.	Asst. Profs.	Lectrs.	Instrs.	Dept. Assts.*	Teaching Fellows	Total
	Acting Profs.	Emer. Profs.							
1899–1900	29	2	15	20	2	40	40	5	153
1900–01	31	2	14	19	2	41	45	2	156
1901–02	29	1	13	22	5	56	43	0	169
1902–03	34	1	12	26	14	64	48	4	203
1903–04	36	2	14	42	14	51	60	3	222
1904–05	39	1	16	48	16	45	86	3	254
1905–06	37	3	18	51	14	55	82	3	263
1906–07	40	3	19	57	14	46	94	3	276
1907–08	44	3	22	59	12	47	104	4	295
1908–09	50	3	28	62	14	53	100	6	316
1909–10	55	8	23	70	14	52	118	7	347
1910–11	47	10	29	64	14	57	75	7	303
1911–12	48	9	42	57	18	81	110	9	374
1912–13	55	8	38	61	17	77	121	16	393
1913–14	72	6	33	82	16	87	114	14	424
1914–15	73	10	43	95	20	83	169	16	509
1915–16	68	10	50	78	20	83	168	26	503
1916–17	71	10	47	83	25	83	178	24	521
1917–18	84	8	53	88	28	85	224	24	594
1918–19	75	10	56	103	32	109	168	30	583

*Including readers.

TABLE 2.—Officers of instruction in the colleges and departments away from Berkeley.

Year	L. O.	Art	Law	Medicine		P. G. Medicine	Dentistry	Pharm.	†Agri- culture
				S. F.	L. A.				
1899–1900	11	8	5	70	....	82	45	10	....
1900–01	12	8	5	68	....	94	45	9	....
1901–02	11	8	5	81	....	101	50	11	....
1902–03	12	9	5	50	....	109	46	10	....
1903–04	13	10	6	62	....	28	24	9	....
1904–05	13	9	6	55	....	23	25	8	....
1905–06	9	9	6	66	....	....	22	8	....
1906–07	7	....	6	52	....	....	34	9	....
1907–08	7	11	6	54	....	....	34	8	....
1908–09	8	7	6	54	....	....	31	8	....
1909–10	7	7	6	58	59	....	26	8	....
1910–11	16	9	6	55	61	....	32	8	10
1911–12	16	10	6	55	61	....	31	7	14
1912–13	17	12	6	53	58	....	24	9	....
1913–14	12	8	8	70	58	....	25	9	12
1914–15	14	8	8	80	145	....	25	8	23
1915–16	12	8	6	98	not reported	....	29	10	24
1916–17	14	13	8	142	121	....	37	7	29
1917–18	14	12	8	159	42	....	39	9	39
1918–19	18	14	9	178	75	....	54	10	58

NOTE.—Officers of instruction in the Hooper Foundation included in the S. F. Medical School.

†Beginning 1918–19 includes University and Farm School courses at Davis and at other outlying departments, including the Graduate School of Tropical Agriculture at Riverside. Before 1918–19, the University Farm only.

21. Total Interpretation.....	1090	2993	1179	3301	1336	3002	1567	4094	1787	4703	2034	3095	2285	5286	2418	3774	2726	3190	2993	0223
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TABLE 3.—Students in the several colleges, 1909-1919.

NOTE.—The upper figures on the left of each group refer to men, the lower to women; the figures on the right side are the totals.

The following table does not include students in the following courses of instruction: University Extension, California School of Fine Arts, The University Farm School, Short Courses in Agriculture, Correspondence Courses, Farmers' Institutes, Wilmerding School of Industrial Arts.

College or School	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
IN BERKELEY										
Graduate Students:	214 211	258 243	311 267	344 304	404 303	459 373	535 477	532 560	377 530	328 477
Undergraduates:										
Letters	35 116	59 113	64 104	69 107	71 105	79 114	* 193			805
Social Sciences	341 768	365 786	342 796	395 911	462 1035	575 1296	1455 (2232 3687 1871	1586 2364	1160 2599	1436 2785
Natural Sciences	230 170	349 260	454 408	566 511	727 595	746 591	1337			4221
Commerce	222 2	258 5	263 5	282 5	282 14	298 13	310 30	363 27	273 87	388 133
Agriculture	191 6	270 10	350 22	429 26	524 28	532 21	537 28	532 14	333 25	356 25
Mechanics	301 0	294 0	316 0	318 0	366 0	361 0	345 0	328 0	234 0	300 0
Mining	243 0	209 0	160 0	132 0	122 0	102 0	93 0	126 0	106 0	107 0
Engineering Unclassified										259
Civil Engineering	232 0	236 0	234 0	224 0	261 0	234 0	196 0	168 0	117 0	151 0
Chemistry	44 2	55 2	56 0	60 0	62 3	69 5	102 4	131 6	139 6	177 8
†At Large	14 21	38 30	29 36	23 37	44 46	3 7	10			
Unclassified										57 0
Medicine (1st and 2nd years)	10 5	27 3	27 1	52 7	39 7	42 7	31 5	39 1	65 3	60 5

TABLE 4.—Attendance in departments not enumerated in foregoing tables, 1915-19.

NOTE.—Instruction in the departments herein referred to does not, generally speaking, lead to University degrees.

	1915-16	1916-17	1917-18	1918-19
University Farm School, Davis.....	314	314	218	163
California School of Fine Arts, San Francisco.....	409	356	507	460
*Lick-Wilmerding Schools (boys).....	446	483	449	473
Lick-Lux Schools (girls).....	.....	.....	.....	227
University Extension				
††Lectures.....	84,627	79,760	102,500	85,273
†Correspondence courses.....	2,060	5,745	2,456	2,835
†Bureau of Class Instruction.....	1,903	3,329	8,004	7,988
†Bureau of Visual Instruction.....	.....	.....	95,000	112,208
University Extension in Agriculture				
†Correspondence.....	24,306	29,622	34,416	1,760
†‡Farmers Meetings.....	5,108	103,792	205,662	206,475
†Home Demonstrations.....	3,720	12,708	75,771	37,816
Short Courses in Agriculture.....	181	250	250	303
Other Lectures.....	32,725	35,708	3,565	16,575

*Before 1917-18 Wilmerding School of Industrial Arts.

†The figures here given represents total attendance during the year, not the number of individuals receiving instruction.

‡In addition to these figures the Southern Division of the Extension Division gave 150 Lectures in 1917-18, and 207 lectures in 1918-19 with an attendance ranging from 75 to 1,100.

‡Beginning December 1, 1916, annual attendance records for Farmer's Meetings are for the twelve-months period, December 1-November 30.

TABLE 5.—Showing proportion (per cent) of the undergraduates, including special students, in each of the colleges at Berkeley.

	1905-06	1906-07	1907-08	1908-09	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
Letters.....	7.70	5.70	5.05	5.07	5.11	5.21	4.66	4.30	3.74	3.80	†			
Social Sciences.....	41.84	41.87	42.14	39.01	37.52	34.86	31.60	31.90	31.83	36.72	67.82	68.57	72.15	67.83
Natural Sciences.....	7.58	8.82	8.42	10.41	13.54	18.45	23.93	26.31	28.11	26.24	}			
Commerce.....	5.71	6.14	6.78	7.03	7.50	7.96	7.44	7.01	6.30	6.11	6.25	6.77	6.42	8.37
Agriculture.....	4.88	5.07	5.05	5.63	6.67	8.48	10.33	11.11	11.74	10.85	10.39	9.47	6.88	6.12
Mechanics.....	10.59	10.53	9.96	10.85	10.19	8.96	8.82	7.77	7.78	7.09	6.35	5.69	4.50	4.82
Mining.....	10.75	10.93	10.65	9.67	8.22	6.33	4.44	3.22	2.59	2.00	1.71	2.18	2.04	1.72
Engineering Unclassified.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.16
Civil Engineering.....	8.37	8.74	9.58	9.11	7.11	7.14	6.49	5.47	5.55	4.59	3.60	2.91	2.25	2.43
Chemistry.....	2.14	1.67	1.49	1.85	1.55	1.72	1.55	1.46	1.38	1.45	1.95	2.37	2.78	2.97
Medicine.....	.....	.30	.26	.55	.50	.09	.08	1.44	.98	.96	.66	.69	1.30	1.00
†Unclassified.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.91
At Large.....	.....	.....	.53	1.33	1.18	*[2.06]	*[1.80]	*[1.46]	*[1.91]	.19	.....	.....	.....	.....
Jurisprudence.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.27	1.35	.94	.40

*In the above table, 1910-11 to 1913-14 inclusive, students at large are summarized separately, and are also distributed among the several college according to expressed collegiate preference.
†Beginning 1915-16, the colleges of Letters, Social Sciences, and Natural Sciences were merged into a single college of Letters and Science.
‡S. A. T. C. and N. U. men who did not specify any college.

TABLE 6A.—Summaries of resident students registered to November 1 (approximately), 1910-1919.

	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
*A. ACADEMIC COLLEGES:										
<i>a. Berkeley</i>										
Graduates.....	406	444	509	535	633	755	863	663	512	709
Undergraduates.....	3012	3273	3695	4279	4574	4801	5110	4560	5117	7886
Totals.....	3418	3717	4204	4814	5207	5556	5973	5223	5629	8595
<i>b. Los Angeles</i>										
Totals.....	3418	3717	4204	4814	5207	5556	5973	5223	5629	8845
*B. PROFESSIONAL SCHOOLS AND COLLEGES										
Deducting for Duplicates.....	78	85	114	115	127	161	173	91	41	157
Grand Totals.....	3756	4074	4585	5220	5614	6013	6522	5707	6155	9528
Students in Berkeley Departments.....	3449	3768	4286	4902	5290	5614	6042	5326	5747	8780
Students in San Francisco Departments.....	262	287	292	314	324	363	425	334	340	498
Students in the Southern Branch, Los Angeles.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	250
										9528

*In the figures for the years 1910-18, the registration in the School of Jurisprudence is included in A (Academic Colleges) and also in B (Professional Schools); for the year 1919 this registration is included only in B (Professional Schools).

TABLE 6B.—Graduate students, academic departments, classified by colleges, November 1, 1919, with comparable figures for 1916, 1917, and 1918.

NOTE.—In the columns showing the number of students, the upper left-hand figures refer to men, the lower to women; the figures on the right side are totals.

	1916		1917		1918		1919	
	265		179		123		218	
Letters and Science.....	422	687	391	572	341	464	391	609
	5		4		1		9	
Commerce.....	0	5	2	6	1	2	2	11
	39		18		5		27	
Agriculture.....	7	46	0	18	1	6	2	29
	8		3		4		15	
Mechanics.....	0	8	0	3	0	4	1	16
	2		3		2		9	
Mining.....	0	2	0	3	0	2	0	9
	2		2		2		6	
Civil Engineering.....	0	2	0	2	0	2	0	6
	28		17		7		28	
Chemistry.....	5	33	1	18	3	10	1	29
	349		229		144		312	
Totals.....	434	783	394	625	346	490	397	709

TABLE 6c.—Undergraduate students, academic departments, classified by colleges and classes, November 1 (approximately), 1918 and 1919.

NOTE.—In the columns showing number of students the upper left-hand figures refer to men, the lower to women; the figures on the right side are totals.

Colleges	Senior or 4th year		Junior or 3rd year		Sophomore or 2nd year		Freshman or 1st year		Special		Totals	
	1918	1919	1918	1919	1918	1919	1918	1919	1918	1919	1918	1919
Letters & Science	95 444	341 555	131 546	369 648	258 661	530 1299	711 758	676 1174	21 51	82 109	1216 2460	1998 3255
Commerce.....	9 6	50 16	21 15	103 34	77 53	166 51	132 56	230 95	2 0	33 7	241 130	582 203
Agriculture.....	21 2	76 6	24 4	121 12	68 5	124 15	120 9	179 16	2 2	20 0	235 22	520 49
Mechanics.....	7 0	55 0	10 0	99 0	27 0	163 0	166 0	232 0	0 0	26 0	210 0	575 0
Mining.....	6 0	26 0	12 0	46 0	8 0	56 0	23 0	82 0	0 0	11 0	49 0	221 0
Civil Engineering.	8 0	30 0	19 0	25 0	25 0	67 0	83 0	97 0	0 0	9 0	135 0	228 0
Chemistry.....	15 2	21 2	17 3	46 3	24 1	67 3	86 3	91 11	0 1	11 0	142 10	236 19
Engineering (unclassified)	12 0	.....	25 0	.....	56 0	.....	210 0	.....	2 1	.....	305 1	.....
Totals.....	173 454	599 1178	259 568	809 697	543 720	1173 838	1531 826	1587 1296	27 55	192 116	2533 2623	4360 3526

TABLE 6D.—Students in professional colleges and schools, November 1 (approximately), 1910–1919
(Berkeley and elsewhere).

College or School	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
School of Architecture..... (Berkeley)	.....	.....	.....	.....	.....	8 0	5 2 7	2 0 2	2 0 2	0 0 0
School of Jurisprudence..... (Berkeley)	75 3	82 3 78	110 4 114	108 7 115	119 8 127	149 12 161	157 16 173	74 17 91	18 23 41	198 31 229
Medical School..... (San Francisco and Berkeley)	49 8	59 10 69	84 17 101	100 20 120	106 22 128	99 17 116	115 14 129	127 18 145	177 19 196	177 30 207
Hastings College of the Law..... (San Francisco)	102 1	115 1 116	96 1 97	79 0 79	70 2 72	70 1 71	87 6 93	32 4 36	37 4 41	48 4 52
College of Dentistry..... (San Francisco)	59 0	75 0 75	89 0 89	90 0 90	112 0 112	140 1 141	173 4 177	166 7 173	171 10 181	226 19 245
California College of Pharmacy..... (San Francisco)	78 7	77 1 78	85 2 87	111 3 114	91 4 95	88 5 93	92 3 95	81 5 86	52 9 61	87 20 107
Los Angeles Medical Department..... (Los Angeles)	28 6	18 1 19	7 0 7	3 0 3	..... ..... .....	27 1 28	46 2 48	39 3 42	45 0 45	...............
Totals.....	391 25	426 16 442	471 24 495	491 30 521	498 36 534	581 37 618	675 47 722	521 54 575	502 65 567	736 104 840

TABLE 7.—Enrollment of graduate students, 1908-19.

	1908-09	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
Total number of graduate students (duplicates deducted).....	403	425	501	578	648	707	832	1014	1092	907	805
Number from University of California.....	236	214	258	307	342	371	424	431	563	487	472
Percentage of graduate students from University of California.....	58.5	50.3	51.4	53.1	52.8	52.3	51.0	53.7	55.5	53.03	58.63
Percentage of graduate students from other institutions.....	41.4	49.6	48.5	46.9	47.2	47.7	49.0	46.3	44.5	46.97	41.37
Total number of colleges and universities represented.....	90	98	120	122	152	146	168	207	175	193	135
*Number of graduate students taking higher degrees (masters' and doctors' degrees, not including juris doctor).....	61	66	79	99	103	149	149	172	168	133	114
*Percentage of graduate students taking higher degrees (masters' and doctors' degrees, not including juris doctor).....	15.1	15.5	15.7	17.1	15.9	21.1	17.9	16.9	15.4	14.66	14.16
Number of graduate students receiving Ph.D..	10	5	6	15	10	14	22	22	33	17	21
Number of graduate students receiving the bachelor's degree.....	7	8	7	7	10	7	3	6	3	2	0
Number of graduate students taking juris doctor in the academic departments.....	7	6	8	13	11	16	20	22	30	5	10

*Beginning 1914-15, includes Degrees of Graduate in Architecture, Graduate in Education, Graduate in Public Health, and Electrical Engineer.

TABLE 8.—Degrees conferred, 1911–19.

DEGREE	1911	1912	1913	1914	1915	1916	1917	1918	1919†
LL.D.	0 0 0	5 0 5	5 0 5	4 0 4	4 0 4	2 0 2	2 0 2	14 0 14	6 1 7
J.D.	8 1 9	10 1 11	11 1 12	15 1 16	18 2 20	22 0 22	27 2 29	3 2 5	9 4 13
Ph.D.	5 1 6	13 2 15	9 2 11	11 2 13	22 4 26	22 0 22	32 3 35	12 3 15	20 4 24
M.A.	5 12 17	4 20 24	6 16 22	12 26 38	43 46 89	48 65 113	49 74 123	28 53 81	25 67 92
M.L.	5 16 21	9 15 24	6 14 20	13 28 41	— —	— —	— —	— —	— —
M.S.	27 8 35	26 9 35	43 13 56	41 18 59	20 5 25	31 3 34	13 2 15	8 3 11	5 1 6
Grad. in Arch.	—	—	—	2 0 2	3 0 3	1 0 1	1 0 1	0 0 0	0 0 0
Grad. in Publ. H.	—	—	—	0 0 0	4 1 5	0 0 0	1 0 1	0 1 1	0 0 0
Gr. in Educ.	—	—	—	—	—	—	1 0 1	1 0 1	1 0 1
E. E.	—	—	—	—	—	—	0 0 1	0 0 0	0 0 0
Met. E.	—	—	—	—	—	—	1 0 1	0 0 0	0 0 0
Min. E.	—	—	—	—	—	—	0 0 1	1 0 0	0 0 0
Number of higher degrees	50 38 88	67 47 114	80 46 126	98 75 173	114 5 72	128 68 196	127 81 208	68 62 130	66 77 143
A.B.	7 26 33	11 25 36	23 24 47	11 24 35	201 310 511	257 331 588	226 357 583	151 453 604	251 422 673
B.L.	41 113 154	42 114 156	54 122 176	111 171 282	— —	— —	— —	— —	— —
{ Nat. Sci.	37 34 71	70 61 131	80 65 145	56 64 120	5 11 16	— —	— —	— —	— —
{ Commerce	2 1 23	21 0 21	32 0 32	27 0 27	37 3 40	39 1 40	46 2 48	13 2 15	23 7 30
{ Agricult're	22 0 22	40 0 40	45 3 48	67 4 71	74 5 79	78 2 80	102 0 102	40 3 43	43 3 46
B.S. { Mechanics	26 0 26	36 0 36	30 0 30	47 0 47	41 0 41	38 0 38	39 0 39	12 0 12	15 0 15
{ Mining	44 0 44	26 0 26	25 0 25	25 0 25	15 0 15	13 0 13	14 0 14	5 0 5	8 0 8
{ Civil Eng.	24 0 24	31 0 31	31 0 31	30 0 30	33 0 33	32 0 32	38 0 38	14 0 14	5 0 5
{ Chemistry	9 0 9	7 0 7	11 0 11	7 0 7	13 1 14	4 1 5	13 0 13	10 0 10	8 1 9
Number of bach- elor's degrees {	232 174 406	284 200 484	331 214 545	381 263 644	419 330 749	461 335 796	478 359 837	245 458 703	353 433 786
LL.B.	19 0 19	28 1 29	22 0 22	30 0 30	18 0 18	8 0 8	16 0 16	6 0 6	11 1 12
*M.D.	5 1 6	10 1 11	11 1 12	11 3 14	12 1 13	25 4 29	22 4 26	— —	17 4 21
D.D.S.	10 0 10	15 0 15	20 0 20	23 0 23	19 0 19	29 0 29	38 1 39	32 0 32	60 3 63
†Ph.G.	30 2 32	31 0 31	28 2 30	41 2 43	36 1 37	27 2 29	31 1 32	22 3 25	23 0 23
Pharm.B.	3 1 4	2 0 2	0 0 0	1 0 1	1 0 1	2 0 2	0 0 0	0 0 0	3 0 3
Ph. C.	—	—	—	—	—	—	2 0 2	3 1 4	1 0 1
Number profes- sional degrees {	67 4 71	86 2 88	81 3 84	106 5 111	86 2 88	91 6 97	87 2 89	63 4 67	115 8 123

† Ph.G. discontinued and replaced by Ph.C. between 1905 and 1911 inclusive. Beginning 1915, Ph.C. was given for completion of four-year course.

* M.D. not conferred, Commencement, 1918, on account of the transition from the four-year to the five-year curriculum.

‡ Figures for 1919, as for the other years represented in this table, include degrees conferred in December.

TABLE 9.—Number of accredited schools each year since 1899.

	1889-90	1890-91	1891-92	1892-93	1893-94	1894-95	1895-96	1896-97	1897-98	1898-99
Number public high schools accredited.....	11	17	24	30	39	43	52	61	66	76
Number private secondary schools accredited	2	6	7	10	9	14	15	15	16	15
Total number schools accredited.....	13	23	31	40	48	57	67	76	82	91
	1899-1900	1900-01	1901-02	1902-03	1903-04	1904-05	1905-06	1906-07	1907-08	1908-09
Number public high schools accredited.....	87	93	93	100	104	99	106	114	122	140
Number private secondary schools accredited	23	23	22	18	20	21	23	23	25	30
Total number schools accredited.....	110	116	115	118	124	120	129	137	147	170
	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
Number public high schools accredited.....	147	155	172	181	192	189	191	248	256	259
Number private secondary schools accredited	31	31	31	32	34	36	36	53	60	58
Total number schools accredited.....	178	186	203	213	226	225	227	301	316	317

NOTE.—Schools authorized to recommend though not regularly accredited: 1909-10, 34; 1910-11, 26; 1911-12, 35; 1912-13, 40; 1913-14, 45; 1914-15, 53; 1915-16, 49.

The summary for 1918-19 includes 62 public and 26 private schools in Division B of the accredited list; the continued accrediting of schools in Division B is rendered uncertain by undeveloped organization, inadequate resources, or other causes.

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The President's Annual Report.

The Prospectus of the College of Agriculture.

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1919-1920

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the University on behalf of the
Regents to his Excellency the
Governor of the State of California

1919-1920

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REPORT OF THE PRESIDENT OF THE UNIVERSITY

UNIVERSITY OF CALIFORNIA,
BERKELEY, January 8, 1921.

*To His Excellency William Dennison Stephens,
Governor of the State of California.*

SIR: I have the honor of submitting herewith my Annual Report on the condition of the University.

Growth of the University Within the past biennium the University of California has become in point of numbers and variety of its responsibilities the largest higher educational institution in the United States, and perhaps in the world. This fact is occasioning considerable disquiet among friends of the University, who question whether we have not already attained greater dimensions than are appropriate or effective. In reply to this I would express the view that the growth of organization in the modern world has superseded early conceptions of possible dimensions. The present generation is accustomed to deal with confidence with units which for size invalidate all previous standards. This is true of finance, of industry, of war, and of education. One hundred years ago leaders in American education regarded the ideal college as limited to about 400 students; today we need not be disconcerted by the presence in one academic organization of 10,000 students. Great numbers, if properly organized, have in fact certain marked advantages, while in the interest of philosophic and scientific discovery the concentration of scholarship at one particular institution cannot be too extensive or too specialized. As a matter of fact, the university establishment at Berkeley has not yet reached its maximum capacity, provided certain needs are met.

**The Southern
Branch**

Meanwhile the University has also added a considerable body of students who have been provided with collegiate instruction within reach of their own homes, by the building up of the Southern Branch at Los Angeles. This institution, which was assumed by the Regents on July 23, 1919, under provisions of a statute of the Legislature, has grown already to somewhat unexpected proportions. More than 2300 students are being instructed at the Southern Branch at the present moment. These students are in two divisions, the teachers' courses and the lower division of the college of letters and science. They are about equally divided between these two plans of instruction. The teachers' course, with its enrollment of approximately 1000, is training 40 per cent of the teacher candidates of the state. The appropriation for the Southern Branch made by the last Legislature proved quite inadequate for its growth, and the Regents allocated out of general University funds an additional sum of \$100,000 for the expansion of instruction during the present year.

**Junior
Colleges**

Friends and administrators of public education in the state at the present time are much interested in the development of junior college instruction at other points than the University. The plan of establishing junior colleges was inaugurated some nine or more years ago. The University has always regarded the plan with interest, and has contributed considerably to its encouragement. There are about twenty junior colleges in the state at the present time. They have a possible attendance of 2000 students. The reports do not indicate that these junior colleges (with a few marked exceptions) have been as successful as it was hoped they would be. Their deficiencies seem to arise out of inadequacy of financial support, the absence of highly trained teachers, and the failure of local school boards to give them a truly collegiate type of instruction. A comprehensive plan of regional junior colleges has been worked out by the legislative committee on education, and will doubtless have much consideration during the ensuing weeks. It provides for a complete districting of the state for the establishment of junior college institutions, with a system of liberal state support for them. This interesting plan may

indicate the character of the system of state instruction to be developed eventually by California. The only question I would raise is as to the appropriateness of the present moment for its inauguration. I think it would be uneconomical to incur the additional expense that will be required for new college institutions as long as it is economically possible for the University to provide all collegiate instruction; and I would further express the view that for the period of the next few years it may be wiser for junior college instruction to develop under the University as it has been developed at the Southern Branch, thereby advantaging by the University's experience and assistance.

Lower Division at Berkeley I have quite definite views, too, as to proposals to suppress at Berkeley the lower division work. This would mean that there would be no freshman and sophomore classes at Berkeley, but attendance would begin with the junior year. In certain colleges this would be a very uneconomical plan. I refer particularly to the technical colleges, civil engineering, mechanical engineering, mining engineering, and chemistry. These colleges require expensive plants, and the number of students in attendance upon them is not large, and does not promise to be large unless the demands of the professions change. It would be a very expensive and unwarranted policy for the state to create lower division engineering colleges as long as the facilities at Berkeley remain ample, as they are now. Furthermore, the University would greatly lose if the lower division was entirely done away with. The most typical educational institution in America is the "college," namely, a four years' course of higher instruction beginning with the freshman and ending with the senior year. While it is somewhat illogical in its plan, and is at present made up partly of elementary and partly of advanced studies, nevertheless it is one of those American institutions which cannot be suppressed without loss to our society. Other institutions have tried to do away with the lower division and have not been successful in their effort to substitute something else than the American "college" as the nucleus of their university life. To suppress completely the lower division at Berkeley would mean the destruction of that great student spirit upon which the university so confidently

relies. It would destroy student self-government, impair all student activities, and would end that place in athletic competition which the University of California seems now to have attained. I am of the opinion, therefore, that while the lower division properly should be reduced, it should not be suppressed.

The ideal classification of the 12,000 students which may be expected at Berkeley within the next few years would be the following: 4000 in the lower division, divided about equally between the technical colleges and the college of commerce on the one hand and the college of letters and science on the other; 6000 in the upper division, coming from the University's lower division, from the junior colleges of the state, and from institutions throughout the United States; 2000 in the graduate and professional division. This approximate distribution of students would give us, in my judgment, a well balanced university, and while preserving our college organizations with their college spirit would permit the larger proportion of the University's power to go into the field of higher studies.

A Separate College of Agriculture There are numerous proposals at present for dividing the University, particularly by removing the agricultural department and erecting it into a separate college. Proponents of this measure point to the fact that most western states have two state institutions, a "university" and a "college of agriculture and mechanic arts." They offer this example to California apparently unaware of the perfectly demonstrated disadvantage which this separation of higher instruction has been to every state which has experienced it. Without exception this subdivision has resulted in duplications of plant and staff, waste of money, impairment of effort, unseemly rivalry, and the creation of a situation which in many states it now seems hopeless to remedy. To invite California to join in this experience is to sacrifice an advantage which the state has had since its University and agricultural and technical colleges were consolidated. There is no more solemn responsibility upon all those charged with the care of the University than to preserve its unity, to find a just balance between the interests of its several parts, and to bind the whole complex of institutions and services into one mighty center of influence,

authority, and research. I look forward with confidence to the campus at Berkeley becoming one of the great centers of teaching and of discovery in the world; but it can only attain this preëminence if its parts are whole and not dissipated and distributed in obedience to particularism and local feeling.

During the years of the war the University's attendance was greatly lowered, many of its teachers were away on national service, and its normal life altered. The end of the war brought a swift return to previous lines of growth. Students returned in numbers at least as great as if there had been no check of growth by the war. Every department of the University found the demands upon it increased. The experience of recent years has encouraged the community to look to the University for greater and more varied services. The result is that during the present biennium the University has been in extreme difficulty to meet the demands made upon it, and particularly to finance its activities under the appropriation of two years ago. The first fiscal year of the biennium was closed with a deficit of \$70,000, but it proved impossible to make any adequate organization for the present fiscal year without incurring liability for the expenditure of an additional sum, which may amount to approximately \$650,000. The present system of support was initiated ten years ago, when the attendance upon the University was about 3500; and the rate of growth has quite outrun the plan which a decade ago seemed both adequate and generous. Under these circumstances friends of the University last summer introduced to the voters of the state an initiative measure which, had it carried, would have given the University a continuing annual support augmenting with the wealth of the state, and producing from the beginning more than four million dollars. This measure was defeated on November 2 by a vote of 380,027 for and 384,667 against. The consideration by the public of this measure drew forth, as was to be expected, a great amount of inquiry and considerable criticism of the University. It also evoked a general and encouraging expression of confidence and regard for the University. Facing only its own responsibilities and those services which an

insistent public desires, the University finds it impossible this year to reduce its request for financial support below the amount which our canvass on behalf of Amendment XII indicated, in round numbers, a biennial appropriation for maintenance of \$9,000,000. In addition to a State University Fund, the Regents ask that the cost of teacher training at the Southern Branch be paid as heretofore from the appropriation for normal school instruction. This would mean an appropriation for the teachers' course at Los Angeles of a half million dollars. The Regents also ask the state to assist in paying for the bed support of that large number of needy or indigent poor who are at present sustained by the University in its University Hospital. For this an appropriation of \$200,000 is sought for this biennium. I give here the abstract of our budgetary needs presented by the Regents to the State Board of Control on December the sixteenth last.

Administration, General Maintenance and Operation	\$1,565,136.00	
Campus Improvements and Building Alterations..	269,385.00	
College of Agriculture.....	2,500,000.00	
Medical Schools and Hospitals.....	1,320,000.00	
College of Dentistry.....	31,000.00	
Hooper Foundation	95,000.00	
School of Architecture.....	48,420.00	
College of Chemistry.....	358,020.00	
College of Commerce.....	231,100.00	
School of Education, including University High School	262,000.00	
Colleges of Engineering.....	402,200.00	
School of Jurisprudence.....	120,900.00	
College of Letters and Science.....	1,990,342.00	
University Libraries	310,000.00	
School of Public Health.....	22,240.00	
Lick Observatory	132,000.00	
Scripps Institution	45,000.00	
Vertebrate Zoology	3,680.00	
University Extension	170,000.00	
Southern Branch	1,000,000.00	
Total for Maintenance for Biennium.....		\$10,876,423.00
New Lands and Buildings.....		4,833,000.00
Total		\$15,709,423.00

It is proposed to ask that the sum recommended for Lands and Buildings, \$4,833,000, be included in the State building plan. Of the above sum of \$10,876,423, asked for maintenance, it is estimated that \$100,000 can be saved by delay in consolidation of the Medical Department and that \$1,200,000 will be secured by University income other than State appropriation. In order to finance the remaining sum, \$9,576,423, it is proposed to ask a separate appropriation of \$500,000 for the Teachers' College at the Southern Branch, being one-half the estimated cost of that establishment; and to ask \$200,000 of the State Board of Control for the support of children's beds and hospitals. For the balance, amounting to \$8,876,423, for the biennium, it is proposed to ask for new legislation providing a definite, dependable "University Fund," augmenting at the rate of seven per cent per annum.

**Student
Behavior
and
Scholarship.**

A general and proper concern has been expressed by the public in the moral behavior of the student body. I wish to state with assurance that in ten years' intimate experience with the students of this place I have never felt greater confidence in the wholesomeness of their relations and in the uprightness and sincerity of their endeavors. Occasional wrong or heedless conduct which draws an undue measure of attention is exceptional and should not prejudice the reputation of the student body as a whole.

It is quite evident, too, that our standards of scholarship are improving. More and more is the serious side of the University life coming to prevail. In spite of the stress of numbers, instruction is not growing weaker, but stronger. The substitution of the 10 unit rule in place of the 8 unit rule, which has heretofore prevailed, establishes a new standard of attainment as a requisite for uninterrupted continuance in residence. There is a greatly increased use of the library and all research facilities. The time is propitious for the advance of the University of California to a preëminent place among the institutions of the world.

Respectfully submitted,

DAVID P. BARROWS.

SUMMARY OF REPORTS

SUBMITTED TO THE PRESIDENT BY DEPARTMENTS*

Agriculture.—During the year 1919–1920 a number of modifications in the plan of instruction was made. Three entirely new courses in general agriculture, one each in agronomy, animal husbandry, and horticulture, were established, and may now be taken as elective work throughout the freshman and sophomore years or at any later time. The new arrangement makes it possible for the student to pursue some work in technical agriculture each term throughout the entire four years. The departments of bacteriology, botany, civil engineering, and zoology have revised certain of their courses better to suit the requirements of agricultural students.

Heretofore, the College of Agriculture has offered seventeen so-called major subjects in some one of which the student was required to specialize. For instructional purposes these seventeen major subjects and certain other divisions of study have been classified into six groups: agricultural science, agronomy, animal industries, forestry, horticulture, and landscape gardening. The student will be enabled to secure a broader foundation without preventing the present specialization whenever deemed desirable. Under the new arrangement the department discontinues forty of its present courses of study and adds eighteen new ones.

Greater elasticity in the curriculum is effected by several changes in graduation requirements. The Study-List Committee has been broadened into a standing Committee on Educational Policy, composed of the Director of Resident Instruction, the Chairman of the Schedule Committee, the Head of the Division of Agricultural Education, the Secretary of the College, and the Chairman of each of the six group curricula.

In order to meet special needs of prospective teachers of agriculture in secondary schools, arrangements have been perfected by which University students may spend the first semester of their junior year at the University Farm in addition to the second semester as at present. This work will be open also to all properly qualified University students of agriculture. Those taking all their work at the University Farm during the junior year need not pursue additional studies during the second semester of the senior year.

The first emergency teacher-training classes at the University Farm, Davis, which continued into the Summer Session of 1918, had an enrollment of eighty-six students. The normal University students in attendance numbered five. One hundred and twelve students enrolled for the 1919 Summer Session classes, and thirteen University students completed the normal courses ending with the present academic year. The department,

* For report of Departments of Anatomy, Biochemistry and Pharmacology, Medicine, Obstetrics and Gynecology, Pathology and Bacteriology, Pediatrics, Physiology, and Surgery, see the report of the Medical School beginning on page 142.

however, has been only partially successful in meeting the need for teachers of agriculture in secondary schools.

Hereafter the Farm School calendar will conform to the University calendar thus increasing the course nearly two weeks.

On account of the greatly increased number of students at the University Farm living conditions have been somewhat distressing, while the great variety of students, from the standpoints of age, preparation and outlook, has made instruction rather difficult.

In addition to the increased number of normal Farm School students, seventy-five Australian soldiers were assigned to the University Farm by their government for instruction mainly in irrigation and animal husbandry. These men were members of a party of ninety-six who, after the completion of more than four years' service abroad, were assigned to a study of agriculture in England, Scotland, and the United States.

Instruction also has been given during the year to about two hundred ex-service men under the auspices of the Federal Board for Vocational Training. The presence of these worthy men, many of whom are of foreign birth, has introduced several problems due to differences of age and lack of early education.

In accordance with an Act of the legislature, the Regents of the University have acquired three hundred acres of land adjoining the site of the Citrus Experiment Station, Riverside, together with certain valuable water rights. The intention of the Act is that when funds are made available by the legislature there shall be developed types of instruction similar to those now being given at the University Farm, Davis.

In California during the year 1919 farm advisors made 25,116 requested farm visits to help solve some specific problem. There were 47,306 persons who sought advice at the farm advisors' offices, while 206,475 were in attendance at the 579 meetings held by the farm advisors. These men wrote 3039 articles for the press and dictated 53,127 letters. They cooperated with thirty-five county farm bureaus in the state whose membership comprises 20,770 farmers. During the year a total of 1414 projects have been determined upon in 322 farm bureau centers. These projects were selected only after due deliberation by the people in various farm centers. Of this number, 399 projects have been completed; no progress has been made on 283; while 735 are still in progress.

The projects consist of demonstrations on soils, fertilizers and cover crops, irrigation and drainage, field crops, horticulture, pests, livestock including dairying and veterinary science, marketing and purchasing, farm management, schools, boys' clubs, and community improvement including roads, telephones, power, and halls.

In addition to these community enterprises determined by the people themselves through the farm bureau centers, the farm advisors located 33,063 field demonstrations at which they held 11,071 field meetings, with a total attendance of 47,372 persons. Among the field demonstrations were pruning, orchard management, better sorghum seed, new grain varieties, barley culture, viticulture, cotton culture, vegetable production, forage grass varieties, cover crops, fertilizers, and other soil amendment, such as the use of lime, soil management, moisture determination, artificial inoculation, livestock judging, pure breeds of livestock, control of animal diseases, orchard testing and pest control, rodent control and farm management.

Among the projects upon which special emphasis has been placed during the year are the long system of pruning, extension in irrigated areas,

livestock auction sales, wool and cotton pools, farm bureau marketing departments, rural fire control, treatment of wheat for smut, selection of grain sorghums for seed, and cow testing.

At the annual farm bureau conference held in April, 1919, the first official steps were taken toward the formation of a State Federation of Farm Bureaus, which was completed on October 22 and 23 by representatives from thirty county farm bureaus. The Federation has been so organized as to represent the plans and wishes of its membership throughout the state. Important advancement has been made during the year in the home demonstration work. Some 1934 women joined the farm bureaus during the past year and became members of their farm home departments. These departments are now working in 108 of the 322 farm bureau centers in California.

The ten county home demonstration agents who were already established conducted demonstrations in 5668 homes. They addressed 619 meetings, with a total of 19,068 persons, and were requested by 1653 housewives to visit their home farms in order to give advice or make helpful suggestions. Their chief activities were directed towards the increasing of flocks of farm poultry, the preservation of foods and vegetables, the conservation of rural health through the building of septic tanks, the remaking of clothing to meet the high cost of living, and the installation of household conveniences.

More and more the agriculture club work tends to become a normal part of the program of the farm bureaus and is less confined to the schools as its initiating place. The 216 agriculture clubs organized during this last year had a membership of 2084 boys. Of these, 1249 turned in definite reports which showed that they raised crops to the value of \$63,306.00 with a total net profit of \$28,930.00.

The projects on which investigations have been made by the research staff during the last eight years have now reached a total of 629. A number have been completed, others were dropped either temporarily or permanently during the war; thus work is now being prosecuted on about 300 projects.

The annual report of the Dean of the College of Agriculture, published separately, will include 148 summaries of investigations carried on during the year. They include studies on citrus fruits, subtropical fruits, deciduous fruits, grapes and olives, fruit projects, walnuts and forestry, entomology, plant diseases, plant breeding, plant physiology, soil investigations, alkali investigations, the chemistry of plant and food products, animal husbandry, dairy products, animal diseases, poultry husbandry, agricultural economics, and agricultural engineering.

The investigational work of the year is noted for the emphasis placed upon alkali investigations, the organization of deciduous fruit studies, and of ranch experiments with beef, made possible by special appropriations from the legislature. The completion of five years of experimental and observational studies of rice investigation in the Sacramento Valley is worthy of note.

Much time has been given by members of the staff in the examination of sites for land settlement and in assisting the Land Settlement Board in outlining methods of cultivation for the Delhi Land Settlement Colony.

In addition to the Directors' Annual Report, there have been published during the year fourteen bulletins and seven circulars, with certain other pamphlets and reprints. Altogether 366,000 copies have been printed. These publications are no longer mailed to a general list of persons but are sent to citizens free upon request.

A large part of the scientific work of the Experiment Station is published in various scientific journals and many practical papers are prepared for the agricultural press of the state.

BULLETINS

- Bul. 310. Plum Pollination. A. H. Hendrickson, Assistant Professor of Pomology.
- Bul. 311. Investigations with Milking Machines. F. W. Woll, Professor of Animal Nutrition.
- Bul. 312. Mariout Barley with a Discussion of Barley Culture in California. G. W. Hendry, Assistant Professor of Agronomy.
- Bul. 313. Pruning Young Deciduous Fruit Trees. W. P. Tufts, Assistant Professor of Pomology.
- Bul. 314. Cow-Testing Associations in California. E. C. Voorhies, Assistant Professor of Animal Husbandry.
- Bul. 315. Commercial Fertilizers. P. L. Hibbard, Assistant Professor of Agricultural Chemistry.
- Bul. 316. The Kaki or Oriental Persimmon. I. J. Condit, Assistant Professor of Citriculture.
- Bul. 317. Selection of Stocks in Citrus Propagation. H. J. Webber, Professor of Plant Breeding.
- Bul. 318. The Effects of Alkali on Citrus Trees. W. P. Kelley, Professor of Agricultural Chemistry in the Citrus Experiment Station and Graduate School of Tropical Agriculture, and E. E. Thomas, Instructor in Agricultural Chemistry in the Citrus Experiment Station and Graduate School of Tropical Agriculture.
- Bul. 319. Caprifigs and Caprification. I. J. Condit, Assistant Professor of Citriculture.
- Bul. 320. Control of the Coyote in California. Joseph Dixon, Economic Mammalogist, California Museum of Vertebrate Zoology.
- Bul. 321. Commercial Production of Grape Syrup. W. V. Cruess, Assistant Professor of Zymology.
- Bul. 322. Evaporation of Grapes. W. V. Cruess, Assistant Professor of Zymology, A. W. Christie, Instructor in Agricultural Chemistry, and F. C. H. Flossfeder, Assistant Professor of Viticulture.

CIRCULARS

- Cir. 214. Seed Treatment for the Prevention of Cereal Smuts. W. W. Mackie, Assistant Professor of Agronomy.
- Cir. 215. Feeding Dairy Cows in California. F. W. Woll, Professor of Animal Nutrition.
- Cir. 216. Winter Injury or Die-Back of the Walnut. L. D. Batchelor, Professor of Orchard Management in the Citrus Experiment Station and Graduate School of Tropical Agriculture, and H. S. Reed, Professor of Plant Physiology in the Citrus Experiment Station and Graduate School of Tropical Agriculture.
- Cir. 217. Methods for Marketing Vegetables in California. S. S. Rogers, Associate Professor of Olericulture.
- Cir. 218. Advanced Registry Testing of Dairy Cows. F. W. Woll, Professor of Animal Nutrition, and P. I. Dougherty, Instructor in Animal Husbandry.
- Cir. 219. The Present Status of Alkali. W. P. Kelley, Professor of Agricultural Chemistry in the Citrus Experiment Station and Graduate School of Tropical Agriculture.

LEAFLETS

- A Plan for Reclaiming and Peopling the Mesa Lands Bordering the Imperial Irrigation District. Elwood Mead, Professor of Rural Institutions.

Anthropology.—The year 1919-20 brought an abnormal development in the number of students taught anthropology. In the introductory course there were 440 enrollments in the first semester and 850 in the second. The latter figure probably represents the largest class ever assembled anywhere for the study of anthropology. The total number of students taking work in the department during the second half-year was well over one thousand.

The Museum in its temporary quarters in San Francisco has continued its usual activities. Eighty-eight public lectures have been given by Associate Curator E. W. Gifford, and more than ten thousand children from the San Francisco public schools have visited the Museum for examination of its collections. The total attendance for the ten months ending April 30, 1920, was 17,764 persons. Donations of specimens have been received from Professor Elwood Mead, Mr. C. J. Simon, and Mrs. M. W. Knight.

Research and resultant publications have received the usual attention from various members of the department. Investigations have been conducted during the year among the Cupeño, of southern California, and among the Pomo, Athabaskan, Wintun, Achomawi, and Maidu tribes of northern California. Publication in the University's series of *American Archaeology and Ethnology* has aggregated over 500 pages.

Architecture.—The quality of the work of the last year compares favorably with that of any former year. In addition to the several special exhibitions held during the semester a noteworthy exhibition closed the college term. The total attendance was over 7000 persons.

The department received two important gifts of books and magazines, one from Mrs. Clinton Day, the other from Mrs. Louise Kidder. Another important gift of seventy-five lantern slides was received from a returned war worker in France.

One of the gratifying events of the year was the selection of D. A. Lovell, graduate with the class of 1920, as one of the Belgian Relief fellows. So small in the total list is the number of architectural students so chosen that recognition of a student of this department for study abroad is doubly gratifying.

Word has been received of distinguished advanced work at L'Ecole des Beaux-Arts by H. T. Howard, class of 1916, who has remained in France since his arrival there with the first University of California Ambulance Unit.

The closing days of the college year witnessed the installation here of Eta Chapter of Tau Sigma Delta, the national architectural honor fraternity.

The following are the most pressing needs of the department: (1) a fireproof room for the department library; (2) undergraduate scholarships and graduate fellowships; (3) prizes for distinguished work, for the bachelor's degree, the master's degree, and the degree of graduate in architecture; (4) chair of landscape architecture, either as a part of, or in closest affiliation with, the School of Architecture.

Astronomy.—The enrollment in undergraduate courses was somewhat larger than normal. The removal of the science prescriptions in the College of Letters and Science last year had the effect of nearly off-setting the expected increase in enrollment. The demand for practical work at the Observatory was greater by twenty students than the limited staff and equipment could supply. Resumption with full vigor of graduate studies which had been curtailed during the war marked the return of A. O. Leuschner, Professor of Astronomy and Director of the Students' Observatory, and R. T. Crawford, Professor of Practical Astronomy. Two candidates for the doctor's degree in May, 1920, are working in the department.

Navigation courses, which received a pronounced impetus during the war when the department devoted much of its time toward preparing young men for the Ensign's examination in the United States Navy, have

been continued with satisfactory enrollment. The course in navigation and nautical astronomy has been developed into such form that successful students are able to pass the examination in navigation for second officer in the Merchant Marine (given by the United States Inspection Service).

While no large additions to the equipment of the Observatory were made during the year, some equipment was procured for the course in Astrophysics, under W. F. Meyer, Assistant Professor of Mathematics and Astronomy. There is urgent need for a laboratory for the further development of the course.

On January 13 Professor Leuschner was appointed Dean of the Graduate Division. Professor Meyer returned to the department; for the second half-year he was promoted to Assistant Professor of Mathematics and Astronomy. H. M. Jeffers, Fellow in the Lick Observatory, kindly volunteered (with the approval of W. W. Campbell, Director and Astronomer, Lick Observatory) to assist in the section work of Astronomy 1.

In consequence of the increased burden of usual academic work the research activities have been less than normal. During the year progress has been made in the development of the theory of the motions of the Watson Asteroids under the direction of Professor Leuschner. Proof of the second volume of his researches on these asteroids soon to be published by the National Academy of Sciences is now being revised.

Investigations by Professor Crawford of the orbit of the supposedly new comet discovered by Sasaki show that this was not a new comet, but is identified with one which had a period of 6.7 years, discovered by Finlay in 1886. Miss Priscilla Fairfield and Miss Edith E. Cummings, graduate students, assisted in the computations. Investigation by Sturla Einarsson, Professor of Practical Astronomy, with the assistance of Mr. Jeffers, of the orbit of an object (announced as a comet) discovered by Comas Solá at Barcelona, showed that the object was not a comet but a new asteroid. Professor Einarsson has practically completed a catalogue of earthquakes at Berkeley, California, from January 1, 1887, to October 1, 1910.

Professor Meyer's investigations of the orbit of Comet *c* 1919 (Metcalfe-Borelly) and his attempt to identify it with the great comet of 1844-45 brought negative results. He has continued at the Lick Observatory his polarigraphic observations on the nebulae.

Botany.*—In the last year the Herbarium has been increased by collections acquired by exchange with other institutions and by gifts received from various sources, including collections made by members of the department. The total number of specimens so acquired is 4630, the principal donor being Mr. S. B. Parish, from whom approximately 3000 sheets were received, the major part phanerogams. Such of the material obtained as may not be eventually included in the general collection will be used for exchange with other institutions. The Herbarium in the last year, as a result of its exchange relations, has received valuable collections illustrating foreign floras; especially satisfactory has been the increase in the Herbarium's representation of Australian plants through exchange with the Botanic Gardens at Sydney and Brisbane. There is urgent need that such exchange relations be inaugurated with other institutions. The department's policy of gradually housing the

* A list of gifts to the Department of Botany, its garden, museum, and herbarium will be found on pages 194-195.

collection in steel cases for its better protection against fire damage has been continued and cases of capacity were purchased to house the accessions received.

The department's service to the people of the state as a center of information concerning both native and introduced plants has increased during the last year. Determinations amounting to 3204 have been made. The Herbarium has made loans to various institutions for use in investigations, notably to the Missouri Botanic Garden, the Field Columbian Museum, and the University of Illinois. Its management has also coöperated with the State Department of Agriculture in the matter of a preliminary weed survey.

The Botanical Museum maintained by the department in connection with the Herbarium has received gifts to the number of 140, an especially valuable accession being a series of nine specimens illustrating little known woods of the Malay Peninsula, received from the Botanic Gardens at Singapore through the courtesy of Major T. F. Chipp. The collections now in the museum are constantly used as illustrative material in instruction in economic botany and are frequently consulted by members of other departments and the general public interested in commercial plant products.

Adequate provision for the proper maintenance and growth of the Herbarium is recommended. In particular, a curatorship and an assistant curatorship in the Herbarium should be established. There is pressing need of a small fund for botanical exploration.

As recommended in previous years the entire Botanical Garden should be moved to its permanent site in Strawberry Cañon. The initial move in this direction has been made this last year when a small tract east of the University Dairy was made available for the carrying on of the tobacco experiments and for the propagation of class material.

For many years the Department of Botany has suffered from the lack of proper classroom facilities. During the last year the situation has been critical. At the present time there is but one laboratory in which large classes can with safety be accommodated. Ultimately the construction of a building for the use of the department alone can meet its needs if the necessary coördination of the different branches of its work, now carried on in three different buildings, is to be achieved.

Chemistry.—In nearly every course of the department, graduate as well as undergraduate, the enrollment during the last year has been double that of any preceding year. The department has endeavored to meet this extraordinary demand upon its resources as fully as possible without impairing the quality of its instruction and without lowering the scientific productivity of its members. In the freshman course, usually attended by 700 students, it was found impossible at the outset to provide laboratory facilities for more than 900 of the 1400 enrolled. These were selected on the basis of competitive examinations during the first three weeks of the term. The students unable to enter the laboratory at the beginning were given the opportunity of taking double laboratory courses during the second half-year, or of taking the whole course in the inter-session and summer session.

It was most strikingly observed that the first 900 admitted to the laboratory included nearly all those who by preparation and by native ability were capable of passing the course. Such an experiment as this carried on by a single department could not be in all respects conclusive, but it showed beyond question that the most rudimentary form of entrance examination at the beginning would suffice to eliminate a considerable

number of students who are obviously unqualified for serious university work in any department, and who, under the present system, are obliged to leave the university during the course of the freshman year.

The high cost of laboratory supplies has not been reduced and although this year laboratory fees were increased by about twenty per cent, receipts from this source did not suffice to pay for the apparatus and chemicals used. It has not been possible to replenish the reserve stock which was entirely depleted during the war.

The Chemical Laboratory of the University of California has become one of the world's leading research institutions. Investigations in pure science, largely discontinued during the war, have now been resumed with increased activity. In addition to the teaching staff and graduate students three of the National Research Fellows have been assigned by the National Research Council to work in the University's laboratory, and several new investigations of a fundamental character are now under way.

Civil Engineering.—In July, 1919, C. G. Hyde, Professor of Sanitary Engineering, released from the U. S. Army as Major in the Sanitary Corps, returned to his university duties. W. F. Langelier, Assistant Professor of Sanitary Engineering, also returned in July, 1919, having completed his work with the U. S. Public Health Service as sanitary engineer for the Emergency Fleet Corporation. It was expected that A. J. Eddy, Assistant Professor of Civil Engineering, would return in August, 1919, but his services were retained until November, 1919, as Major in the Coast Artillery.

H. D. Dewell, class of 1906, consulting engineer in San Francisco specializing in structural engineering, was appointed Lecturer in Civil Engineering in place of Professor Eddy for the six months' period ending December 31, 1919. The latter returned to the University in January, 1920.

Since no enrollment in the four years' course in military engineering leading to the degree of B.S. in Civil Engineering was received since its first announcement in July, 1917, the Engineering Council has recommended its cancellation.

Again this year for one month following Commencement Day, May 12, instruction was offered in the Summer School of Surveying near Santa Cruz. Work was given in elementary surveying field practice to freshmen in the engineering colleges, and in railroad surveying to students who had completed the junior year in the College of Civil Engineering.

Increase in enrollment in the department promptly followed the return to peace conditions. With added responsibilities the staff must be strengthened not only by increase in the number of instructors but more particularly by the selection of teachers entitled to full professorships in certain of the sub-departments; for example, (1) architectural engineering, (2) surveying and geodesy, (3) testing laboratory, (4) sanitary laboratories. Space also is needed for the expansion of sub-departments. Either the old Mining Laboratory or a new building with proper drafting room and laboratory facilities is immediately needed. There are not enough lecture rooms in the Civil Engineering Building, nor are they sufficiently large. The problem will become doubly serious after August, 1920, since in the surveying courses alone double the former number of lecture sections will be established.

It has been hoped that eventually the Department of Irrigation would be housed in the same building with the Department of Civil Engineering. In previous reports (for the past eight or more years) reasons were

indicated why an association of the two departments would present substantial advantages. Professor B. A. Etcheverry, speaking for the irrigation department, has continuously endorsed the proposed plan.

Floor space for the growing department library is required. Collections of blue print drawings of engineering structures, specifications, descriptions of actual work, photographs and other illustrations of completed structures, progress photographs of work in the act of construction or erection, portfolios of engineering works, trade catalogues, and a rapidly increasing list of annual reports from city engineers, state engineers, public commissions, the Engineer Corps of the War Department, and Federal bureaus, now overflow present library quarters. Already four drafting rooms on the second floor are being devoted to the filing of blue prints. There is no available reading room under proper supervision.

The department has voted to discontinue instrumental and mechanical work for other departments and for outside interests.

The following memorandum indicates the nature of research problems undertaken or capable of being undertaken by the department independently or in coöperation with other departments and institutions:

1. Research in the Testing Laboratory.
 - a. The Effect of the Shape of Cross-tie on the Distribution of Loading to the Roadbed. (Wiskocil.)
 - b. The Effect of High Holding Pressures on the Strength and Other Physical Properties of Cement Mortar and Concrete. (Wiskocil.)
 - c. A Method of Obtaining Soil Solution. (Lipman and Wiskocil.)
2. Research in the Sanitary Laboratory. (Apparatus for this work is now under construction.)
 - a. The Tyndall Phenomenon as a Possible Means of Determining Low Turbidities of Water. (Langelier.)
 - b. A Study of Local Clays, with a View to Making Alumina Available for Use as a Coagulant in the Purification of Water. (Langelier.)
 - c. Studies in the Theory and Practice of Coagulation of Aluminum Hydroxide in the Purification of Water. (Langelier.)
 - d. The Dewatering of Sewage Sludge by Pressures Greatly in Excess of Those Now in Use. (Langelier and Wiskocil.)
3. General Civil Engineering Research.
 - a. A Compilation of Existing Data and Study of Wind Pressure Intensities. (Eddy and students.)

A series of problems of vital consequence to the health, comfort and welfare of the people in urban and suburban districts is comprehended by the necessity for the disposal of municipal and industrial wastes in innocuous, positive and economical fashion. These problems are of particular importance to the State of California and to the West Coast generally for obvious reasons. It is therefore suggested that the legislature be asked to provide \$110,000 in ten annual installments, the first of which shall be for \$20,000 and all others \$10,000. This sum will provide for the equipment and maintenance of an effective experiment station to be operated in coöperation between the Bureau of Sanitary Engineering of the California State Board of Health, the Sewage Disposal Committee of the Division of Chemistry and Chemical Technology of the National Research Council and the Department of Civil Engineering of the University of California. It is proposed only to investigate problems which are of great importance and upon which reasonably definite conclusions have not elsewhere been reached by investigation and experience.

Drawing and Art.—The great gain in the enrollment during the last year has made it necessary to increase greatly the number of sections, requiring two new instructors, one in mechanical drawing and one in graphic art. Even with this help the classes have often exceeded the capacity of their rooms. The illness of H. Kower, Professor of Drawing, has necessitated extra work upon the members of the department in caring for his classes.

During the year special research in the teaching of mechanical drawing and graphic art in the elementary and the secondary schools has been carried on. It is intended to publish the results of these investigations in the near future.

Economics.—During the academic year 1919–20 a number of changes was made in the department. The elementary course was revised not only as to content but also as to the method of handling the large number of registered students. During the first semester about 1400 students were cared for, while in the second semester about 1100 were enrolled. The department has stressed the advanced and graduate work much more than in the past.

Announcements concerning the Flood Fellowships have been sent to all of the important universities of the United States in the hope of attracting a higher quality of applicant and also for the purpose of building up closer connections between the Department of Economics and other universities. Letters have been sent to all of the universities and important colleges west of the Rocky Mountains bringing to their attention the offerings of the department and urging a better spirit of coöperation between those departments and this.

The department was handicapped during the last year, as were the other departments of the University, by the large number of students in the upper division courses. In the more detailed professional courses, usually attended by thirty or forty students, it has not been unusual to have a registration of between three and four hundred students, making it difficult to give instruction of the proper character.

In spite of the heavy registration and the extra administrative work entailed, the research of the faculty has been continued. Miss Jessica Peixotto, Professor of Social Economics, has prepared a detailed and noteworthy study of a budget for a professor's family. She has also directed the following research carried on by her more advanced students:

- Study of home work in the cravat industry in San Francisco;
- Study of typical industrial day nurseries in California;
- Study of methods of admission to five typical orphanages in California (part of a national study);
- Preparation of a manual of the laws of California that relate to children.

Solomon Blum, Associate Professor of Economics, is completing his volume on "Principles of Labor Economics." He has been directing various studies which have been made by his advanced students covering the following subjects:

- Attitude of California organized labor and employers to vocational education;
- History of the Coast Seamen's Union;
- History of labor legislation and administration in California since 1908;
- Women's trade unions in the bay region;
- Industrial accident and disease statistics in local shipyards;
- Study of the effect of posture upon efficiency.

I. B. Cross, Professor of Economics on the Flood Foundation, and Professor Blum have given a course in industrial goodwill and employment management in which about twenty-five advanced students have been trained. They have carried on field researches among the employers of the bay region for the purpose of ascertaining what is being done toward removing the causes of industrial discontent. It is hoped that the results of these studies may be edited and published as a university volume to supply California employers with data showing what efforts are being made in this state to bring about better industrial relations. Professor Cross hopes to complete his volume on "Foreign Exchange" some time during the fall semester. Stuart Daggett, Professor of Railroad Economics on the Flood Foundation, has completed his study of the Southern Pacific Railway Company, the result of ten years of research. C. C. Plehn, Professor of Finance on the Flood Foundation, has revised his standard volume on "Public Finance" and is at work bringing his larger volume on "Taxation" to a conclusion. Felix Fluegel, Instructor in Economics, will complete his study on "Types of Income Taxes" before the opening of the first semester. E. A. Kincaid, Instructor in Economics, will also complete his study of "Land Grants to the Southern Pacific" before the close of the summer vacation. J. B. Washburn, Instructor in Accounting, is writing a volume dealing with "Definition of Income." Mrs. Barbara N. Grimes, Lecturer in Law and Social Economics, hopes to have her study of "Social Insurance in California" ready for publication within a few months. F. R. Macaulay, Assistant Professor of Economics, has made some extremely interesting studies of bond yields which were presented before the State Railroad Commission at a hearing conducted by that body. He also prepared a statistical study during the second half year of the influenza epidemic in Berkeley.

The departmental needs are concerned primarily with the providing of a larger number of faculty members to take care of the extremely heavy registration. During the year the department has carried approximately 10,000 registrations.

Education.—The last year has shown remarkable progress in the restoration of educational work to a normal status. Not only have the totals of class enrollment exceeded high marks of former years but the percentage of men students enrolling for advanced work leading to administrative positions and to leadership in vocational education has steadily increased. Strong evidence that the state looks to the University for leadership in education has been made more pronounced by the increasing demands upon the department for extramural service.

R. J. Leonard, Professor of Vocational Education, has brought together a number of vocational interests of the University into a Division of Vocational Education under the School of Education. In every respect the response to this work from students and from the state at large has been encouraging. Courses of an advanced type for students who seek positions in the elementary field of the public school system, offered by C. D. Mead, Associate Professor of Elementary Education, have been sought by students in ever increasing numbers.

The demand that the department offer courses in psychological and sociological aspects of education was met by the appointment of J. V. Breitwieser, Associate Professor of Education. The appointment of R. S. French, Assistant Professor of Education, has made it possible greatly to strengthen courses in the history, philosophy and principles of education. The appointment of H. L. Eby as Teaching Fellow in Education

enabled the department to meet, for the first time, a demand for special work in rural education; and that of H. W. Edwards to a similar fellowship meets a demand from the State Department of Education as well as from teachers now in the field, for courses touching the principles of instruction in the applied sciences.

Professors Mead and French have had charge of surveys of educational conditions in seven different cities and counties of the state. Professor Leonard has made a survey of the University's interests in vocational education. W. W. Kemp, Professor of School Administration, has assisted in a survey of the Industrial (Reform) Schools of California, and in a survey of educational conditions in the territory of Hawaii. He was chosen by the United States Bureau of Education as one of a Federal Survey Commission for the latter purpose.

During the year the department has organized a Bureau of Research in Education. Beginning modestly, this bureau will seek to render assistance to those now actively engaged in the work of public education. Recently it issued as its first publication an announcement setting forth its organization, explaining types and methods of work and offering a classified list of suggestive problems and studies in education. Special research projects recently completed or under way in the department are noted. Two other studies not included in the announcement are ready for publication: "The Problem of Adequate Salaries for Elementary Teachers, with Special Reference to Alameda County," by Mr. A. S. Colton, under the direction of Professor Kemp; and "Some Phases of Elementary School Finance in California," by Mr. A. M. Wolfenden, also under the direction of Professor Kemp.

The United States Bureau of Education has named the University, through the Department of Education, the Pacific Coast research branch of the national bureau, and Professor French has been named special collaborator for this work.

The work of the University High School must be given special mention and credit. Both the spirit and the accomplishments of the school exceed what might be expected from its equipment and the size of its staff. The City of Oakland, through its School Department, proposes to supply the School of Education with an adequate and well-equipped plant for its school for the training of teachers under supervision.

No provision has yet been made for a school of elementary grade which is open for observation and experiment to students in the University. No greater need exists in the School of Education than that of adequate facilities for such advanced work in the theory and practice of elementary education. Provision in this school should be made for a model kindergarten and parallel grades.

The organization of intermediate, or junior high schools, has advanced throughout the state and nation with such vigor as to make certain that this new type of school has passed beyond the experimental stage. Yet the handicaps of the department have made it impossible to respond to the opportunity of meeting the new need for leaders in this work. The teaching profession of the state is asking for the appointment to our departmental staff of one or more specialists in junior high school problems.

The housing of the department is most inadequate. The location of the department also makes it inaccessible and inconvenient for students. In the building plans of the University the needs of the school and department should have immediate attention.

English.—The heavy enrollment in the autumn of 1919 was paralleled by that in the spring term. In freshman English the applicants numbered more than 2000 each semester. Unable to meet the demand with the available resources, the department decided to give the more standardized courses in freshman composition in classes of one hundred and two hundred students, with provision for individual work in sections. It has also been decided to charge a small fee in English 1, to cover the cost of mimeographed material for the large classes and to provide for the gradual purchase of a reading and reference library for their use.

Perhaps the most notable change in the work of the upper division has been the opening to properly equipped sophomores of all courses normally listed in this division. Accordingly, the department last year omitted the listing of courses as offered in both the upper and lower division (*e.g.*, English 17–117; English 25–125; etc.)

Attention is directed to the need of further courses in American Literature. The loss of Professor William Dallam Armes and the constantly increasing demands made upon the department by the University—especially in composition—have made it impossible for the present staff to offer more than a single three-unit semester course in this important field.

The upper division courses in advanced exposition have been nearly adequate to the demand, but the courses in advanced description and narration have fallen far short. For these sections there has been a demand nearly three times the number of students finally accepted. It is certain that the sections could have been filled twice over with students whose ability and zeal entirely justified their applications.

The graduate courses offered by the department will henceforth comprehend two distinct types: one, for prospective candidates for the teachers' recommendation; and one, into which only candidates and prospective candidates for higher degrees will be admitted. Normally the department will no longer permit students to work simultaneously toward the teacher's recommendation and a higher degree.

A plan has been adopted for a department conference for alternate Fridays at eleven o'clock, to be attended by instructors and by members of the seminars which are restricted to candidates for higher degrees. At each meeting one or two members of the conference will present some of the results of investigation. There will be time for question and discussion.

In pursuance of the policy which achieved successful results during the preceding year, the members of the department conducted during the spring semester a series of public readings in English literature.

Mr. Robert Hunter offered a seminar in Social Ideals in English Letters under the auspices of the department.

Although handicapped by the administrative duties of several of its members, the department has continued its research activities. C. M. Gayley, Professor of the English Language and Literature, has collaborated with B. P. Kurtz, Professor of English, in preparing Volume II of *Methods and Materials of Literary Criticism*. The volume (*Lyric, Epic, and Allied Forms of Poetry*) is now in press.

The series constitutes the only comprehensive, classified, and textually-documented survey of ancient and modern studies in the field of comparative literature that has been undertaken since the publication of Quadrio's *Della Storia e della ragione d'ogni poesia* in 1752, and of Blankenburg Sulzer's *Allgemeine Theorie der schönen Künste* in 1798. The resumé of historical material and methods has been supplemented by

independent results of critical research in accordance with the opportunities and procedure of present-day scholarship. In the intervals of other undertakings in research Professor Gayley has devoted his leisure to this series for over thirty years. Upon the investigations requisite he has spent in European libraries three whole years and incidental summer vacations. Professor Kurtz has been engaged in the preparation of the second and third volumes for fourteen years, and during the current year has added to this work, by way of an appendix, a bibliography (30,000 words) of the more general library histories, bibliographies, reviews, and journals pertaining to the study of ancient and modern, European, American, and Asiatic poetry. An exhaustive index (20,000 items) was also prepared.

Throughout the year Professor Kurtz has carried on comparative study in the beginnings of poetry. He has gathered from the songs of the simpler peoples new materials for study and has begun the task of textual criticism and analysis of form and content. An article on certain Andamanese songs has been prepared and accepted for publication.

W. M. Hart, Professor of English Philology, has continued his investigations in the development of the Narrative Art. He is also collaborating with Professor G. R. Noyes of the department of Slavic Languages in preparing *Master Spirits of Literature*. C. W. Wells, Professor of English Composition, has now with the press two books, one a critical edition of Kingsley's "Westward Ho!", the other a grammar. A book on the aesthetics of the novel is under way. The preliminary survey for one of its parts will appear in the Gayley Memorial volume. H. L. Bruce, Associate Professor of English Composition, has a section on "Thinking and Writing" in *The New World: College Readings in English*. He has done editorial work on that volume, prepared in collaboration with Guy Montgomery, Instructor in English. Professor Bruce is at present directing his study to the early decades of the Romantic Movement. A. G. Brodeur, Assistant Professor of English Philology, is engaged in the revision of his monograph: "The Grateful Lion, from Apion's *Androcles* to Chrétien's *Yvain*." He plans in the course of the next few months to complete his study of *King Horn* and *The Husband's Return*. R. W. Gordon, Assistant Professor of English Composition, is engaged in research on special problems concerning the English and Scottish Popular Ballads, and the history of the ballad collectors. Mr. Montgomery has prepared a section on studying and reading in the volume *The New World: College Readings in English*, in collaboration with Professor Bruce. The results of his study of the investigation and the development of the lyric as a type of poetry will be presented to the department at the close of the first term, 1920-21. Mr. Montgomery is now beginning an investigation of verse-satire in English from Dryden to Byron. C. H. Raymond, Instructor in English in Business Practice, has studied the principles of suggestion and of deliberation with their application to English literature and with their employment in the writing of today. His manuscript, the result of this study, will be published this summer as *Modern Business Letters and Advertisements*. A. E. Anderson, Instructor in English, is investigating the life and writings of Henry David Thoreau. This investigation is directed towards the publication of a book on Thoreau. Mr. Anderson has prepared an essay on *The Lao Teh King: A Chinese Mysticism* which will be published shortly in the *University Chronicle*.

In celebration of his thirtieth year of distinguished service to the University of California (1889-1919), the members of his department and

former students of Professor Charles Mills Gayley this year presented to him a set of anniversary papers. This includes, as will be seen, evidence of further research by the members of the department.

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2. James, Bergson, and Determinism. Evander Bradley McGilvary, Ph.D., Professor of Philosophy, University of Wisconsin.
3. Some Old French Miracles of Our Lady and Chaucer's *Prioresses Tale*. Walter Morris Hart, Ph.D., Professor of English Philology, University of California.
4. The Art of Narrative in Autobiography. Chauncey Wetmore Wells, A.B., Professor of English Composition, University of California.
5. Songs of the Andamanese. Benjamin P. Kurtz, Ph.D., Professor of English, University of California.
6. The Transmission of Folk Tales. Stith Thompson, Ph.D., Professor of English, Colorado College.
7. English and American Appreciation of Rabelais. George Rupert MacMinn, A.B., Associate Professor of English, Throop College of Technology.
8. Coleridge's Estimate of Fielding. Frederic T. Blanchard, B.L., M.A., Associate Professor of English, University of California.
9. Blake, Carlyle, and the French Revolution. Harold Lawton Bruce, Ph.D., Associate Professor of English Composition, University of California.
10. Poe's Doctrine of Effect. George F. Richardson, Ph.D., Associate Professor of English, University of Texas.
11. Psychoanalysis and Literary Criticism. Herbert Ellsworth Cory, Ph.D., Assistant Professor of English Composition, University of California.
12. Androcles and the Lion. Arthur Gilchrist Brodeur, Ph.D., Assistant Professor of English Philology, University of California.
13. The Litany in English. Jane Gay Dodge, M.A. (sometime) Instructor in English, Vassar College.
14. The Lady from the Sea. Sigurd Bernard Hustvedt, Ph.D., Instructor in Rhetoric, University of Minnesota.
15. A Study in the Origin and Character of Gaelic Ballads. William W. Lyman, Jr., M.A., Instructor in Celtic and English, University of California.
16. A Method of Studying the Structure of Primitive Verse, Applied to the Songs of the Teton-Sioux. Guy Montgomery, M.A., Instructor in English, University of California.

The Department of Celtic has pursued its usual policies during the year. There has been a noticeable increase in the number of students enrolled. W. W. Lyman, Jr., Instructor in Celtic and English, has carried on the following research activities: An investigation of Old Irish kennings, especially in relation to Anglo-Saxon and Old Norse; a revision of a monograph on "Gallie Ballads"; an essay on "Old Irish Lyric Poetry."

French.—The Department of French began its independent existence in July, 1919. At the opening of the first semester some 1750 students enrolled for courses in French, of whom 1254 were registered in lower division classes, and 496 in upper division and graduate courses.

In May, 1920, Régis Michaud, Professor of French, was notified that the Académie Française had awarded him the Prix Monthyon for his "Emerson et Montaigne" and his "Mystiques et Réalistes Anglo-Saxons," two books published shortly before he began his work at the University.

The collection of French literature and of works bearing thereon in the University Library ranks high among the great American collections of like character. The department hopes to establish next year a laboratory in the literal sense, i.e., a phonetic laboratory which of course could be utilized by other linguistic departments of the University.

There is need of a "Maison Française," a residence approved by the University for students who desire to live in a French atmosphere. Such a home has been established at Columbia University, at the University of Chicago, and elsewhere in this country. Evidence of this need is seen in the formation at the University during the last year of various French clubs.

The Alliance Française, through its official representative, Professor Michaud, has established a branch at the University. Professor Michaud and other members of the department also established new agreeable relations and fostered those already existing between the University and the large French colony in San Francisco. The French Consul General, Mr. Jules Neltner, coöperated cordially; mention also should be made of the generous interest of Mr. Paul Verdier and Mr. Raphael Weill.

On January 31, Captain Henry Nègre, representing the Direction des Services Français sur la Côte du Pacifique, gave a banquet to the sixteen or more members of the University of California Ambulance Unit then present in this region. Among the speakers were the French Consul General, Professor Charles Mills Gayley, R. T. Holbrook, Professor of French, Professor Michaud, and three or more members of the Ambulance Unit, including Mr. J. B. Whitton, Mr. R. L. Smyth, and Mr. W. B. Wright.

The Théâtre Française de San Francisco, directed by Mr. André Ferrier, a distinguished actor and operatic singer, has invited members of the department to various theatrical performances by his company and on more than one occasion has talked to our students in Berkeley, reciting for them various fine specimens of French poetry. This Théâtre is a valuable auxiliary to the Department of French.

Among the French lecturers who visited the University in 1919-20 were Abbé Ernest Dimnet, Professor Albert Feuillerat (recently Exchange Professor at Yale), and Mr. Maurice Maeterlinck.

Two French students recently come from France served as assistants in the department. They were Mlle. Marthe Sturm and Mr. Albert Pagès. Sincere regret of students and colleagues alike marked their return to France at the close of the semester.

Owing in large measure to the ever loyal interest of Gilbert Chinard (until July, 1919, Professor of French at the University of California), the Direction des Services Français in New York City has undertaken to provide the department with information and documents concerning France and things French. Cinematographic films as well as gifts suitable for prizes have been received already.

Informal visits to the high schools of the state were made by members of the department as part of a program of increased coöperation between the University and the state schools. Several high school teachers attended graduate courses.

The Library of French Thought now comprises a comprehensive collection of French books. Its possibilities as a center for intellectual social gatherings, including occasional lectures, special exhibitions, are evident. The Library is open to the public during the morning and afternoon.

Geography.—The increased attendance of the last year has emphasized the fact that the ratio of the number of students to the number of instructors in the Department of Geography is too large for satisfactory results. For the coming academic year the department has reduced the number of courses offered and increased the number of teaching assistants but this is only a temporary relief. The real solution is the employment of additional well-trained instructors in order that better and needed courses may be offered.

Research has been decreased during the last two years as a result of the pressing needs of instruction for lower division classes. This summer and during the coming year it is planned to carry forward the investigations in the two special problems now under way; namely, the study of the variability of rainfall in California and the character and extent of recent earth movements in the Coast Ranges indicated by the comparative elevations of river and ocean terraces found in that region.

One important result of the great war is that leaders everywhere are realizing more than ever before that a thorough knowledge of geographical conditions of the countries of the world is absolutely essential. The conduct of the war itself made an unusual demand for expert geographers. The attempts to formulate just conditions of peace have made clear the impossibility of judging other nations fairly without a thorough knowledge of their geographical conditions and of the inevitable control which these conditions exert not only upon their agriculture and their industry but also upon their national policies. There should be offered in this university courses on the regional geography of various states—especially of the countries of the Orient and of South America. To meet this need it is suggested that a professorship of foreign geography be established. To this professorship should be invited from year to year the men best qualified by study and by personal observation to present the physical, economic and human factors that are included in geography from the viewpoint of modern civilization.

Geology and Mineralogy.—The work of the department, which had been materially altered during the period of the war, was placed on a normal basis again during the year 1919–1920.

The seismographic station was in operation continuously throughout the year although for several months no study of the records and no preparation of material for the Seismographic Bulletin could be made. As the coastal region of California is an active geological province and as an understanding of earthquakes is of considerable practical importance to the people of the state, the University of California should be a center for seismographical instruction and investigation. It is very desirable that this work should be developed more fully than in the past, and it seems quite probable that in such development the University could receive the active coöperation of the National Research Council.

The elementary classes in Geology 1A and 1B have grown so large that for some time it has not been possible to hold them in Bacon Hall. This unfortunately prevents the students from deriving the full advantage from the instruction, in that it does not permit the use of abundant illustrative material, nor does it afford frequent contact with models, maps, minerals, and rocks.

Bacon Hall provides a number of excellent work rooms, but has not sufficient space available for the convenient storage of equipment, and consequently the office and laboratory rooms are overcrowded with material. A larger museum space would make available much more material to interest and instruct both students and the public. Since the war in 1914 instruments for petrographical research have not been available, as our American makers have never freed themselves from dependence on certain European manufacturers. The equipment for class and research work is showing the effects of wear and tear, and it is hoped that with the establishment of normal trade relations the department will be able to make the necessary replacements and improvements.

During the year the department lost three instructors in succession, as a result of the inducements offered by oil companies. These companies have not only taken members of the staff, but have drawn away a number of graduate and even undergraduate students, thus interfering with the continuous supply of properly trained men. The difficulty of obtaining instructors may temporarily curtail the work of the department.

Two pieces of research were completed last year; one a contribution to the origin of certain metalliferous minerals, and at the same time to local geology in San Diego County, and the other a study of the origin of the manganese deposits of the Sierra Nevada. At the present time research is being carried on in fields of sedimentation, structural geology, stratigraphic geology, and mineralogy.

German.—The enrollment in the courses in German during the present year shows signs of recovery from the effects of the war. In 1918–19 only fifty-eight students began the study of German in August, and only thirty-four in January; this year the figures were, respectively, 143 and eighty-eight.

The department undertook to complete an investigation planned and partly carried out by the late Professor Pinger for the Semicentennial Publications. L. M. Price, Assistant Professor of German, and H. K. Schilling, Professor of the German Language and Literature, edited Professor Pinger's manuscript, arranged the material collected by him, and summed up the results. The volume is now in press and will appear shortly.

Professor Price collected an elaborate bibliography of English-German literary influences, which has appeared in the University of California Publications in Modern Philology; it is to be followed by a second part entitled "Survey," a summary of the present state of investigation in that field, which is now in press and will appear before the close of the year.

In Professor Schilling's Germanic seminar investigations have been carried on in three fields: literature, archaeology, and philology proper. The vague and conflicting notions of biographers and literary historians concerning Goethe's political interests have been corrected by a thorough examination of his works, his correspondence, and his recorded verbal utterances, and the results have been accepted as a doctor's thesis and are to appear in the University publications. The curious phenomenon of a survival of matriarchial traditions in the mediaeval German epic has for the first time been exhaustively investigated in another doctor's thesis which is likewise to appear in the University's publications. Finally, the mooted question of the origin of the modern German form of the future tense has led the department to investigate the usage of old high German sources, with the result that already the conclusions of a thesis submitted at another university have been refuted and a final solution of the problem has become a strong probability.

Greek.—The Department of Greek has now developed more fully its plan to offer courses suitable not only for students of the Greek language but also for those in other departments whose special work calls for an acquaintance with Greek civilization in some one of its various phases. The courses of this description to be offered in 1920–21 will include Greek art and architecture, religion, government and law, literature and the drama, and various aspects of Greek philosophy. The department continued its policy of issuing annually a special announcement of courses, intended primarily for the information of those who may desire to undertake graduate work in Greek.

J. T. Allen, Professor of Greek, has been elected to the Managing Committee of the American School at Athens, and has been invited to go to Athens in the near future as Annual Professor. These honors are a gratifying recognition of Professor Allen's important discoveries concerning the famous theatre at Athens.

During the second semester of the coming academic year Professor John Adams Scott, of Northwestern University, the distinguished Homeric scholar, will be in residence as Sather Professor of Classical Literature. In addition to the Sather Classical Lectures, of which the subject will be the origin of the Homeric poetry and its relation to tradition and to recent archaeological discoveries, Professor Scott will offer a course of lectures for undergraduates upon the literature of Ionia and the adjacent islands.

Professor Allen's published book, "The Greek Theatre of the Fifth Century before Christ," presents in part the results of investigations extending over a number of years. I. M. Linforth, Professor of Greek, has published a book on "Solon the Athenian," containing a biography, a text and translation of the poems, textual and explanatory notes, and a number of excursions on various historical problems. G. M. Calhoun, Assistant Professor of Greek, has completed the publication of a series of three studies on special pleas in Athenian courts.

History.—The Department of History was forced by the unprecedented increase in enrollment during the last year to devote most of its time to elementary instruction. Formerly History 1, with an enrollment of from 500 to 700 students, had provided instruction for the lower division students. In the fall of 1919 two new lower division courses (History 4 and History 8) were established to take the place of History 1, which had been given by Professor Henry Morse Stephens, who died in April, 1919. History 4 covered Europe since 1500; and History 8, the development of the Western Hemisphere from 1492 to 1920. This latter type of course, a new departure in university instruction in American history, has met with approval and will be continued. In the fall semester nearly 2000 students enrolled in the two courses, and in the spring semester nearly 2400. To drill these students seventy-eight sections were necessary in the spring semester, and a corresponding number in the fall semester.

Not alone have the lower division classes become overgrown. More serious is the condition in some of the upper division courses. Each advanced student should have the advantage of personal conferences with the professor. This is out of the question when classes run beyond a certain limit. Some members of the department are attempting to give instruction to enough students for two, three, or even more professors. Additional teachers are needed, and especially a Professor of Modern History.

During the year the department formulated its statement for the Announcement of the Graduate Division, especially with regard to the

requirements for the degree of Doctor of Philosophy. Special credit is due to L. J. Paetow, Professor of Medieval History, whose draft of a plan was made the basis of our deliberations. The requirements for the degree of Ph.D. in history are probably more exacting than those of any other university in the country.

The graduate work of the department has grown steadily in recent years, in spite of war conditions. An increasing body of advanced students come here from all parts of the country to take higher degrees in history and to use our library facilities. During the last six years nineteen men and one woman have taken the degree of Ph.D. in history, besides a number who have taken the subject as a minor. During the same period some seventy-five have taken the degree of M.A. in history.

A promising sign is the growing number of our graduate students who go abroad to study. This is one of the wholesome influences of the Great War. Mr. Arthur Watts, who has been studying history in England as LeConte Fellow during the past year, will remain another year on the same fellowship. Mr. Lloyd Mechem and Mr. Arthur Aiton will spend the year in Spain as Native Sons Travelling Fellows; Miss Doris Beppler is holder of a scholarship awarded by the Society for American Fellowships in French Universities and will spend the year in France; and Miss Nancy Yerkes, as a holder of a Belgian Relief Commission Fellowship, will spend the year in Belgium. Other advanced history students who will be studying abroad next year are Charles E. Mitrani, who will be in Constantinople, and Livingston Porter, who is studying in Prague and other centers of Eastern Europe.

Aside from the need of more time on the part of the professors to devote to advanced teaching and research, the things most essential better to promote our graduate work are, more money for library purchases and more fellowships, both resident and travelling. The department looks forward expectantly to the time when the funds for the Henry Morse Stephens Travelling Fellowship in European History shall become available.

The results of research completed by the department members and advanced graduate students have found publication in the University of California Publications in History, in the publications of the Academy of Pacific Coast History, in independent books, in the *American Historical Review*, and in numerous other publications.

Complying with the request of the President, the Department of History reorganized on an elective basis. The principal features of the constitution which it adopted are: (1) Annual election, by ballot, of a chairman and a secretary. (2) The chairman may not hold office for more than two years in succession, nor more than two years out of any five. The secretary may not hold office for more than three consecutive years. The organization was put into effect July 1, 1920. H. E. Bolton, Professor of American History and Director of the Bancroft Library, was elected chairman for the ensuing year, and Professor Van Nostrand secretary.

W. A. Morris, Associate Professor of English History, will be on leave of absence during the academic year 1920-21, which he will spend in England in the completion of his work on the office of Sheriff in Medieval England.

The exchange of professors with Chile went into effect during the last year for the first time. In January Professor Charles E. Chapman went to the University of Chile at Santiago to give instruction during the calendar year 1920. In return the Chilean government sent Professor

Raúl Ramírez, Professor in the University of Chile, to teach in the University of California. He gave instruction in the summer session and in the fall semester. In the absence of Professor Chapman, Professor Priestley has served as chairman and secretary of the University Committee on Relations with Hispanic America.

Assistant Professor Fuller, who was here on a temporary appointment, returned to Harvard at the end of the year to complete his work for the doctor's degree.

Professor Bolton has been invited by President Lowell of Harvard to deliver a series of lectures during December and January in Lowell Institute, Boston, and has been granted a leave of absence during those months.

Home Economics.—*Division of Household Art* reports a total registration of 649 students, of whom 200 were enrolled in the courses in elementary design and color. Five exhibitions of design and textile work were held by the department to bring before the students some of the tendencies and opportunities in modern design, illustration, industrial art, and hand-painting with dyes. One of these exhibitions was the work of Miss Lucy Conant, Lecturer in Design. Another was a travelling exhibition of industrial art sent from Washington, D. C., by the American Federation of Art. The others represented the work of the students in the department. The average daily attendance at the exhibitions ranged from 450 to 600 persons, and were attended by large classes of children from the public schools in the bay section under escort of their teachers, as well as by the University public. It is believed that this is one of the most effectual methods of establishing standards of taste and of creating a demand for good manufactured products.

Eight public addresses before women's clubs of the bay communities were given by members of the department. These concerned the subjects of batik, one of the ancient crafts of India, style in dress, old colonial weaving and its application to modern life, textile tests for fabrics in modern commercial use, vocational opportunities for women trained in household art, the place of design in industrial art, suitable wardrobes for college girls, and house furnishings for rural homes.

Five publications were issued during the year.

The American Home Economics Association requested the coöperation of the department in a movement to bring about the standardization of textile manufacture and purchase in this country. Five hundred copies of this questionnaire were sent out and a statistical report of the answers received was sent to the association at Washington.

A valuable addition to the departmental equipment this year for the textile class work was that of fifteen Spencer microscopes. The large student enrollment rendered inadvisable the further loan of these instruments from the Departments of Zoology and Physiology. Lantern slides for the "History of Furniture" and photographs for laboratory use have been added. Some valuable books for the study of "Patterned Textiles," "Interior Decoration," and "Household Management" have been added to the departmental library.

The design, color scheme, many costumes and properties for this year's setting of the Partheneia were carried out by the students under the direction of the teaching staff of the department. Much of the material used was decorated and dyed in the laboratories for the "History of Costume" class.

The Division of Household Art greatly needs a practice house where the household management course, the house planning and furnishing course,

and the advanced courses in experimental design for stage settings and costumes may be held. Such studios are needed to house the illustrative material necessary for these specific types of courses and for desk room for class work. Other needs include a well-equipped stage with lighting facilities for artistic work and with curtain and lantern for stereopticon lectures, an exhibition room for the weekly concourse and the changing exhibitions of illustrative material, a suitable textile laboratory for chemical analysis, dyeing and testing, and most important for the elementary and the graduate students alike a building upon the campus where the beautiful collections of furniture, textiles, laces, and prints left by the late Mrs. Phoebe A. Hearst to the University can be made available for daily study and research.

The department earnestly looks toward the building of the Museum here in the near future with classrooms under its roof for the conduct of educational museum work for the school community outside the University as well as for our own students.

Division of Household Science reports that in the summer session of 1919 seventy-four students were registered in the three courses of the division, that during the fall semester, August to December, there were ninety-two registrations, seventeen of which were in graduate courses, and that in the spring term, January to May, there were eighty-nine enrollments, eleven of which were in the graduate division. Since 1916 the annual enrollment figures have been as follows: 167, 907, 700, 181.

The course in extension organization first offered in the spring of 1919 has for its object the specific training of senior and graduates in household science for work as home demonstration agents and leaders under the United States Department of Agriculture and the State College of Agriculture. The course was repeated in the spring term just past, and was given in abbreviated form in the summer session of 1920. Excellent coöperation with the department of home demonstration extension work in the College of Agriculture has been established and the state leader of this work, Miss Harriet G. Eddy, Assistant Professor of Agricultural Extension, expresses herself as thoroughly satisfied with the potential service rendered her department by this training course. It is considered worth while to continue this course, initiated as a war measure.

In the spring term students in this course, number 112, and in course number 130, on the nutrition of development, assisted materially as part of their field work in the organization and carrying out of the so-called nutrition classes of under-nourished children in three of the Oakland public schools. It is proposed to continue this aid and to include such special training as is feasible for leaders in this work.

The lower division course in food problems will be discontinued during the coming year. A new course, laboratory methods in metabolism, will be offered in response to a request from the Public Health Department. Its purpose will be to train young women particularly for responsible positions in hospital, research, public health, and other physiological chemical laboratories. In response to another definite vocational need and demand, a course in institution management will be offered. While at first it will be largely of a survey and analytical nature, later it is hoped to develop the course with the addition of field and practice work in connection with dormitories or commons.

During the year progress has been made upon several problems. Miss Anna Williams, Instructor in Household Science, and Miss Ruth Okey, Assistant Professor of Household Science, have prepared an excellent yield of inulin from the French artichoke, a source of this substance

hitherto overlooked. Miss Okey, with a graduate student, has made a large number of blood sugar analyses with reference to the menstrual cycle, and has made further inulin utilization experiments with animals. Miss Williams and Mrs. Agnes F. Morgan, Associate Professor of Household Science, have carried on a systematic inquiry into the teaching of home economics in the California high schools. Professor Morgan, with the assistance of one of two students, has initiated an investigation into the vitamin content of skim milk and by means of feeding experiments with white mice. This work will probably continue over some years. Professor Morgan with a graduate student, has made a number of studies of thrice cooked vegetables for diabetes, and of creatine and uric acid metabolism in human subjects. Three reports from the department have been published in scientific journals during the year. More laboratory space for the accommodation of apparatus and workers upon such problems is urgently needed by the department.

Other needs of the department include a larger animal room, well constructed metabolism cages, and standardized apparatus such as balances, weights, volumetric glassware.

A desirable connection not now available is that with a near-by hospital, in which some metabolic and dietetic measurements might be carried out. Some coöperation with the University Infirmary, the Berkeley Dispensary, and the University of California Hospital has already been established, but the condition in this regard is as yet unsatisfactory.

The field for practice in institution management remains to be developed in some similar manner, when University dormitories or commons are in operation.

Hygiene.—The courses in elementary epidemiology, advanced epidemiology, public health administration, and public health laboratory, which had been interrupted by the absence of Dr. J. N. Force, Associate Professor of Epidemiology, on war leave during 1918–19, were resumed during the last year.

The content of the laboratory course has been much modified by recent discoveries, since the research methods of yesterday tend to become the routine methods of today. An increase in the number of hours of instruction will be necessary next year in order to cover the field.

The vocational opportunities for non-medical public health workers are three in number: public health laboratory practice, public health nursing, and secretarial positions in public health agencies. Training for the first two of these has been well established and standardized, but the third is in a tentative stage. The course in public health administration has been planned to serve as an introduction to this field. During the year students in this course have assisted in the Health Development Bureau of the Berkeley public schools and in the Berkeley Dispensary. The students have carried on and illustrated by appropriate charts the following studies:

1. A determination of the three-year median curve of absences for each school in Berkeley, for comparison with the current absence curve.
2. A study of the effect of school nursing on absences due to communicable diseases.
3. An efficiency survey of the outcome of cases closed in 1919 by the Berkeley Dispensary.

Instruction has been given in epidemiology and public health administration to the group of forty nurses enrolled in the curriculum in public health nursing. An opportunity for practice in connection with this instruction was given by the appointment in February of Dr. R. T. Legge,

Professor of Hygiene and University Physician, as health director of the Berkeley public schools. Since that month, eighteen nurses and a field supervisor have been on duty in the schools. In addition to developing a record system and a follow-up program of absentees from all courses, child welfare clinics have been organized in connection with two schools.

The field work of all of our students has been of such a quality that the department is now constantly in receipt of requests for their services to assist in working out various public health statistical problems. It is hoped that this work will be further stimulated by the addition to the department of a public health statistician.

The department has engaged in the following research: 1. A study of the intradermal method of smallpox vaccination has been made. The observations have been completed and the collected material is ready for interpretation. 2. A study has been made of the epidemiology of smallpox in California with reference to the effect of the Vaccination Act of 1911 on the incidence of the disease. Computations have been completed and the material is ready for graphic presentation.

Attention should be called to the imperative need for an additional laboratory room with offices for two members of the teaching staff.

Irrigation.—The enrollment in the irrigation courses is largely dependent on the number of upper division and graduate students in the College of Civil Engineering and Agriculture. It was materially decreased during the war period but increased to about normal during 1919.

In past years the enrollment has included a number of students from foreign countries and outside states. They have come from Australia, Russia, Siam, Java, Palestine, South Africa, Philippines, Japan, South America. During the year there were three scholarship students from the Philippines and one sent by the government of Java.

In recent years provision for instruction in irrigation has been made in nearly all western colleges and universities, and to a small extent in several eastern institutions. The instruction offered by the department here is more complete than elsewhere, and the books written by the members of the department are used as text-books in practically every institution where irrigation instruction is given. These books are three volumes on Irrigation Practice and Engineering, by B. A. Etcheverry, Professor of Irrigation Engineering; one book on Operation and Maintenance of Irrigation Sytsem, by S. T. Harding, Associate Professor of Irrigation; and one book on Elements of Western Water Law, by A. E. Chandler, a former member of the department.

The extent to which this department has been instrumental in advancing instruction in irrigation is indicated by the number of graduates who have charge of irrigation instruction in other institutions. One of the department's graduates developed the teaching of irrigation at the Agricultural College of New Mexico. The Agricultural College of Utah has strengthened and extended its work through the efforts of Professor Israelson, formerly of this department. Professor Kelton at the University of Arizona specialized here as a graduate student in irrigation. Another graduate student is developing instruction in South Africa.

A year ago the University of the Philippines sent a graduate scholarship student here to prepare for the teaching of irrigation in that university. A professor from Japan has been enrolled in the course here during the last year. The Dean of the College of Engineering of the University of the Philippines writes that after a careful study the Department of Irrigation here has been selected for the future study of irrigation by *pensionados*. The Director of Public Works of the Philippines sent two scholarship

students this year to study irrigation here in preference to any other institution. The Director of Irrigation of the Union of South Africa is sending one of the young engineers to this university to enter in August for special instruction in irrigation.

The demand for graduates from the College of Civil Engineering who have had the special training given by the irrigation courses has always been very satisfactory and has usually exceeded the number of graduates available. The department has sent its graduates on irrigation projects to many western states. This year there was a demand from Arizona, Colorado, and Wyoming which could not be supplied.

Italian.—The Department of Italian began its independent existence (along with the departments of French and of Spanish) in July, 1919. The Administrative Board on August 3, 1919, requested R. T. Holbrook, Professor of French, to supervise the work of the Department of Italian. Miss Maria Teresa Tommasini was appointed Instructor in Italian. In 1918–19 the number of students of Italian was not more than twenty-five or thirty. In August, 1919, about 180 students endeavored to enroll for courses in Italian.

It is to be hoped that within the next year or two the University of California may be able to provide for at least three sections of Italian A—averaging not more than thirty students each; and to provide also for at least one section of course C (3 hours), one of D (3 hours); for at least three upper division courses (totaling not less than 8 hours), and for at least two graduate courses (totaling at least 4 hours)—a grand total of some 33 hours, requiring not less than two instructors on full time and one assistant or teaching fellow. Italian B seems to require no special calculation; it may be advisable to offer B only in the second semester.

At the University Italian has had both a marked and a healthy growth. This can be fostered by the appointment of a distinguished scholar as professor in the department.

The collection of Italian books, though rich in several fields, lacks certain very important authors or editions necessary for advanced study. In 1919–20, the regular allotment for the most important living European languages (not including Russian) was in units (one unit = \$31.62) for French, 10; for English, 20; for German (including 2 units for Scandinavian), 7; for Spanish, 8; for Italian, 4.

Some four or five years ago a *Circolo Italiano* was organized at the University. This club aims to promote the knowledge of Italian at this University, to enable the students of Italian to speak the language that they are studying. The *Circolo* has grown remarkably. Between August, 1919, and May, 1920, the members listened to various lectures and talks in Italian and English; those in Italian were given generally by well-known Italians belonging to the Italian colony of San Francisco or by Italians passing through California. The Italian Consul General, Cavaliere Da Villa, was present at several meetings of the club. The *Circolo* of this University owes much to the late Henry Morse Stephens, who was generous of counsel and who spoke often, under the auspices of the *Circolo*, of the importance of the Italian language, of Italian history, of Italian art. It is of course important to win and to keep a sympathetic interest in the Department of Italian among the cultivated Italians of this region and of others.

Jurisprudence.—The year 1919–20 has seen the introduction of the first year of the four-year curriculum in the School of Jurisprudence. The underlying thought of the new arrangement is, on the one hand, that the law student of today requires more than a technical training to be a

useful lawyer and citizen, and on the other hand, that legal studies, professional and non-professional, with related subjects, offer a vast field of cultural value. The preparing lawyer should know something of the law as a part of the social system, not confining his legal education merely to the law as an independent science. With such needs in view, while the main portion of the four-year curriculum is made up of professional courses, a fair percentage of time is left open to non-legal subjects such as political science, economics, and history, as well as other suitable branches of knowledge. Likewise in order to enrich his legal learning, every student is required to take a certain number of such non-professional subjects as Roman law, jurisprudence, history of law, comparative law and international law. The four-year course is for the present open to students who have had at least two years of university preparation. The three-year curriculum is also for the time being continued, three years of preliminary college preparation being requisite for admission thereto.

The enrollment of 103 students in June, 1919, has been increased to 231. Of this number fifty were registered in the first year of the four-year curriculum. In addition to the students registered in the professional courses, instruction was given to 1071 students registered in non-professional law courses. One hundred and eighteen college graduates were registered, twenty-three colleges being represented. The J.D. degree was granted to twenty-eight candidates.

A. M. Kidd, Professor of Law, M. C. Lynch, Professor of Law, A. T. Wright, Professor of Law, and J. U. Calkins, Jr., Lecturer in Law, returned after a year of absence on leave. Edward Elliott, Professor of International Law, took out a year's leave of absence. The course in international law was given by Charles E. Martin, Ph.D., Columbia University, 1918. To fill the vacancies caused by the resignations of F. S. Philbrick, Professor of Law, and M. E. Harrison, H. H. Phleger, F. P. Griffiths, A. P. Matthew, and A. G. Tasheira, Lecturers in Law, Professor Max Radin, LL.B. New York University 1902, Ph.D. Columbia University 1910, and Professor G. H. Robinson, S.J.D. Harvard Law School 1916, were appointed. Milton W. Dobrzensky was appointed Lecturer in Commercial Law.

During the Summer Session of 1919 the course in contracts was given by Arthur L. Corbin, Justus S. Hotchkiss Professor of Law, School of Law, Yale University. Professor Leslie J. Ayer of the Law School of the University of Washington gave a course in commercial law, and Professor Lynch conducted Equity II. Dr. Jau Don Ball, Professor of Mental and Nervous Diseases, Oakland School of Medicine and Surgery, Edward O. Heinrich, City Manager and ex-officio Director of Public Safety, Boulder, Colorado, August Vollmer, Chief of Police of Berkeley, Francis L. Ingersoll, and A. R. Mehrtens of Berkeley gave courses in criminology.

Latin.—During the entire year the department was fortunate in counting as a member Edward Kennard Rand, Professor of Latin in Harvard University, who served as Sather Professor of Classical Literature. He offered a stimulating course on Medieval Classical Culture throughout the year, and in addition gave instruction in Pastoral Literature and in Virgil's Georgics. Professor Rand delivered numerous public lectures both within and without the University.

It has been determined that hereafter when a scholar is invited to become the Sather Professor, it shall be with the distinct understanding that in addition to a normal university course he shall deliver a series of public lectures on the field of classical studies in which he is most

interested and that these lectures shall be published by the University. It is felt that important advance in the administration of the professorship has been made and that in this way the cause of classical studies will be greatly benefitted.

In the field of research W. A. Merrill, Professor of the Latin Language and Literature, has continued his studies in Statius' *Silvae* and published contributions in the University of California Publications in Classical Philology dealing with books III and IV. H. C. Nutting, Associate Professor of Latin, has completed a translation of *Pierino Belli's De Re Militari et de Bello*, Venice, 1584; this work is to be published in the series instituted by the Carnegie Endowment to render more generally accessible the sources from which international law is derived. Professor Nutting also has nearly ready for publication an extensive study dealing with a hitherto unsettled question regarding a certain tense use of the subjunctive in Ciceronian Latin. O. M. Washburn, Associate Professor of Classical Archaeology, is working in the field of archaic Greek sculpture on studies concerning the relations of Egyptian technique to such problems as the standing position of early Greek statues, the technique of the statue versus the technique of the relief sculpture, the Aeginetan smile, the law of frontality, etc., etc. He is also preparing a new and enlarged work to take the place of his History of Ancient Art for the use of freshmen. The book of T. Petersson, Assistant Professor of Latin, on Cicero, in the Semicentennial Publications of the University, is about to be published by the University Press.

Three members of the department have served the University in important administrative capacities: L. J. Richardson, Professor of Latin, as Director of University Extension; Professor Washburn as Acting Manager of the University Press, and M. E. Deutsch, Associate Professor of Latin, as Dean of the Summer Session in Los Angeles and as member of the Advisory Administrative Board of the Southern Branch of the University.

For the year 1918-1919 Professor Nutting was president of the Pacific Coast Philological Association, and a member of the Council of the newly organized American Classical League.

Mathematics.—In spite of the suspension during the war of the requirements in mathematics in the College of Letters and Science, the enrollment in courses in mathematics amounted to more than 2500 in the first half-year. As the number of teachers in the department has not been increased for ten years, the average size of sections in the lower division has gradually increased until in this first half-year it amounted to sixty-seven, more than twice too large for effective instruction. By withdrawing some courses and postponing others, this average was reduced to below forty in the second half-year.

Relief from this condition may be secured either by the addition of a number of instructors or by the withdrawal of those elementary courses offered in the high schools. The requirement recently voted by the Academic Senate, it is urged, ought to be modified. The duplication at the University of courses in mathematics given in the high schools results in a serious interference with the courses in higher mathematics and with the research activities of the department staff.

For a number of years the department has had a considerable number of excellent advanced students in the summer, but it has been unable to offer them the full opportunities of such study owing to the peculiar status of the summer session. The establishment of a summer session at

Los Angeles, furthermore, means a division of the summer staff between Berkeley and Los Angeles. Assistance from the University budget is recommended.

For several years the department has endeavored to increase the permanent staff with the addition of distinguished mathematicians from other universities. Notable men have been attracted to the summer staff of the department, and for two half-years the department has had the assistance of Professor Dickson of the University of Chicago, and of Professor Keyser of Columbia University for one half-year by exchange. Establishment of exchange professorships would be of great benefit to the students as well as to the members of the staff.

Mechanical and Electrical Engineering.—During the past year the Department of Mechanical and Electrical Engineering has had the largest registration of students in its history. This has resulted in an unusual amount of classroom work for the instructors and in reducing the time for research and other activities to a minimum. The necessity of increase in laboratory equipment for the vastly increased enrollment is obvious. Many laboratory sections are now operated from 1 to 6 P.M.

B. F. Raber, Professor of Mechanical Engineering, has supervised the testing of headlight lenses and signalling devices for the State Motor Vehicle Department, in which work L. M. K. Boelter, Instructor in Electrical Engineering, has been engaged also. During the last eighteen months the department has developed a laboratory for the testing of automobile headlights and safety devices and has carried through important and exhaustive tests on the operation of some eighty-four lenses and fifty signal devices.

Courses in marine engineering and naval architecture recently inaugurated in the department have assumed new importance on account of the present international situation and the revival of the American Merchant Marine.

The instruction in heat power engineering given to the students of mechanical engineering has been reorganized and amplified so as to give a sequence of two years of work, one half-year to sophomores, the entire year to juniors, and one half-year to seniors. This is in accordance with the best practice of other engineering institutions and should result in material improvement in the instruction.

Enrollment has exceeded all expectations in the course in descriptive geometry inaugurated in January, 1920, under F. H. Cherry, Assistant Professor of Electrical Engineering.

Many members of the department are engaged in important engineering projects for purposes of research. It is interesting in this connection to note that the theses prepared by seniors of the department, numbering from twenty to thirty per year, are usually concerned with problems in which the staff is interested and frequently constitute additional chapters added from year to year to the investigation of a single problem.

Since 1914 the department has inaugurated courses in electrical engineering for students not registered in the College of Mechanics; courses for non-engineering students in automotive construction and operation; summer courses in shop work; aerodynamics; radio telegraphy and telephony; and other courses heretofore mentioned.

The spirit of the department is excellent. No better time has existed for coöperation in the development of opportunities and facilities for the instruction of engineering students. The prospective engineering developments of the State of California render the need for this growth immediate

and imperative. The department must preserve a position of leadership and must afford opportunities of instruction suited to the best minds that the State can produce.

Military Science and Tactics.—There was no change in the organization of the Reserve Officers' Training Corps Unit during the year. Students of the United States Naval Reserve Force receiving military training were organized into a separate company and attached to the Reserve Officers' Training Corps regiment.

The courses of instruction were those prescribed in R. O. T. C. regulations except in the theoretical instruction of second year students who belong to the United States Naval Reserve Force. These students were given theoretical instruction from the Blue Jackets' Manual.

The University was again announced by the War Department as a "Distinguished College" for the years ending June, 1919, and June, 1920. The total enrollment of students in the department for the half-year August–December, 1919, was 2135, 1983 in the R. O. T. C. Unit and 152 attached to the unit for military training. The enrollment January–May, 1920, was 1792, 1682 in the R. O. T. C. Unit and 110 attached. The minimum strength of the regiment for the year was 1695 on April 21, 1920.

Captain Curtis D. O'Sullivan, Infantry, was relieved from duty as Assistant Professor of Military Science and Tactics on September 29, 1919. Captain Frederick McCabe, Infantry, was detailed as Assistant Professor of Military Science and Tactics at this University pursuant to War Department orders, December 8, 1919. Captain McCabe was on leave of absence from December 9, 1919, to January 1, 1920. There have been no other changes during the year amongst the officers detailed for duty in the department. The administrative work of the department has been very heavy during the year, and the number of students in the department has been so large that more officers are urgently needed.

Because of the shortage of officers it was necessary to utilize third-year and a few second-year students as instructors in freshman and sophomore theoretical courses. It is desirable to utilize fourth-year students as instructors in theoretical courses but it is unfortunate for the department to be obliged to depend upon students who have not attained senior standing for this work.

Mining and Metallurgy.—The outstanding feature of the year has been an unprecedented increase in the student enrollment. Statements prepared by the Recorder show an increase during 1919–20 of 110 per cent as compared with the figures for 1918–19. In addition to this growth in the College of Mining there has been a marked increase in attendance in courses offered by the Department of Mining and Metallurgy by reason of the interest of students enrolled in other colleges.

A considerable part of this increased registration may be ascribed to the stimulation of public interest in the mineral industries as a result of the war. A part of it, too, is due to the abnormal growth of the University itself, in which all colleges included with the University must share. But the large percentage of students who come from outside the State of California, many of them by transfer from Eastern institutions, can be regarded only as a tribute to the high repute with which the College of Mining is held among those interested in the mining industry.

Another evidence of the standing of the College of Mining among the mining schools of the United States is found in the demand for University of California graduates in the mineral industries. This demand for graduates has far exceeded the supply during recent years. Interest of

mine operators in the development of technically trained men in the University of California is also evidenced by offers from some of the largest mining and metallurgical companies in the West to assist in a practical way by offering summer work to students. All students of the College of Mining who desired employment during the present summer were placed in remunerative temporary positions offering excellent opportunity for practical contact with mining problems.

The trend of student interest toward the new four-year course in Petroleum Engineering seems worthy of note. Twenty-five and six-tenths per cent of students enrolled in the College of Mining are now specializing in this subject, and many others enrolled in the colleges of Chemistry and Letters and Science are majoring in various phases of petroleum technology. The petroleum industry is California's most important mineral industry, and it seems proper that a state which produces twenty-seven per cent of America's petroleum supply should foster and develop in its university a curriculum that will provide adequate technical training and instruction for engineering students who plan to participate in this vital industry. Opportunity for advanced research in this new and rapidly developing field must also be provided.

In addition to the maintenance of laboratories during a period when supplies and equipment have been most expensive, it has been found possible to make a number of important additions to permanent equipment. The metallurgical laboratories have benefitted by new concentration and flotation machinery. The mining laboratory has been equipped with new devices for the heat-treatment of steel, and with additional instruments for compressed air measurement and control. Additions to the oil-testing equipment of the petroleum laboratory have been provided. Many valuable books have been added to the department library. The Lawson Adit has been driven further into the hills, and a concrete portal erected at the entrance, surmounted with a suitable bronze name-plate. The laboratories have profited by certain readjustments of space and equipment which has also resulted in a better correlation of related departments. It has been found necessary to expand facilities for instruction in wet-assaying. Drafting rooms, taxed to their utmost capacity, have been somewhat relieved by an interchange of space with the United States Bureau of Mines Experiment Station.

In the field of research, several important problems have been receiving the attention of the staff. The selective concentration of sulphide minerals by flotation, the magnetic concentration of ore and minerals, the principles in the design and efficiency of crushing machinery, the examination of slags and furnace charges suitable for tin smelting, the study of certain phases of amalgamation, an investigation of the relative merits of various types of blasting caps, of factors of importance in mine ventilation, the selection of clays for use in rotary drilling, the influence of saline ground waters on the setting action of Portland cements, and the effect of internal combustion-engine use on various mineral-oil lubricants, have been under investigation by faculty members and advanced students.

The United States Bureau of Mines Experiment Station, operated under a cooperative agreement with the Department of Mining and Metallurgy, with its personnel of engineers and chemists under the direction of Dr. L. H. Duschak, offers an opportunity to advanced students in the College of Mining for close contact and practical participation in metallurgical research of the highest order. Within recent months the Bureau has been allotted additional space on the main floor of the Hearst

Mining Building, which has made possible a more efficient arrangement of its laboratories and equipment. During the last year the local station has been conducting researches in the technology of caustic magnesia manufacture, a substance in demand for use in oxy-chloride cements; in the metallurgy of quicksilver; and in the volatilization and condensation of lead, zinc, silver and copper, a process which promises to solve the "complex ore problem."

During the last year the United States Bureau of Mines has also established headquarters in the Hearst Mining Building for its Pacific Coast Mine Safety Station. This station, with a staff of ten, under the direction of Mr. Byron O. Pickard, District Mining Engineer, is charged with the training of miners in California, Nevada, and Arizona in mine rescue, first aid, and mine sanitation. A fully equipped mine rescue railroad car, and a Packard high-speed auto rescue truck, provide prompt transportation for the station personnel and its equipment to any mining district in the West in time of fire, explosion or other disaster, when the services of trained men and special equipment are required. The engineers of the station will annually train and instruct members of the senior class of the College of Mining in the details of their work. During Commencement Week, 1920, a mine rescue and first-aid contest was held on the University Campus, under the joint auspices of the United States Bureau of Mines and the Department of Mining and Metallurgy. Teams from the Grass Valley mines, from Stanford University and the College of Mining, University of California, participated in the contest, which, it is hoped, will become an annual event.

Music.—Although the department's work is made somewhat difficult by reason of an insufficient staff, it has taken care of an increased attendance in students. There is a marked increase of general interest in music and a consequent improvement in quality of work done, particularly on the more scholarly side. This is evidently the result of the encouragement given by the donation of the George Ladd Prix de Paris in Music Prize for composition, and the Enid Williams Memorial Scholarship in Music, the numerous excellent concerts given on the campus during the last two musical seasons, and possibly, the steady development of the Parthenon toward a realization of its ideals.

A recent addition to the staff has resulted in a more efficient system in the training of high school teachers of music. The present quarters of the department will be sufficient for another year.

Oriental Languages and Literature.—During the last year some 608 students have enrolled in the courses of the department, but this unusually large number is due in part to the combination during the second semester of the class in Oriental 129B with Political Science 106. The lectures in the latter course were to cover the subject of the International Relations of the Far East, and inasmuch as E. T. Williams, Agassiz Professor of Oriental Languages and Literature, had announced a course in Recent Chinese History, it was found practicable to broaden the scope of the latter and unite the two classes.

The work of Professor Williams and of the two instructors, Y. S. Kung and S. C. Kiang, has included ten language classes and five lecture courses. The lectures have covered such topics as Chinese history, Chinese geography, Chinese social institutions, Chinese literature and art, and Japanese life and culture. In addition to the usual work of the college year two courses of lectures were given by Professor Williams in the Summer Session.

One noteworthy event of the year was the detail here by the United States War Department of four officers to study oriental languages. Two of these men spent the year in the study of the Chinese language and the other two in studying Japanese.

It is gratifying to report that the binding of the Kiang Library of Chinese works has been completed. The library is now installed in room 416 of the Library building.

There were approximately 150 students enrolled in the Japanese lecture courses each term and about thirty-five in the language courses. The text used was prepared by Mr. Kuno of the University. Many of the students who gained their knowledge of the Japanese language in the University are now working in Japan in educational, religious, commercial and governmental work. Two young officers of the United States Navy with the forces in Siberia who were found to be well prepared in the Japanese language were students of the University.

The new phonetic system of spelling Chinese characters which was sanctioned by the government of the Chinese Republic has been for the first time introduced to this country through the University's classes.

Professor Williams has prepared a paper, now in press, upon "The Open Ports and Towns of China." This is believed to be the first attempt to give a complete list of these cities (107 in number) with their location by latitude and longitude, an account of the circumstances leading to their opening, a classification of them with respect to the manner of governing the foreign settlements that are established in them, with a description, ethnological, political and economic, of the regions served by them.

Palaeontology.—The courses in palaeontology and historical geology during the last year have been somewhat larger than in previous years and the number of graduate students shows a marked increase over the preceding year. In all the laboratory seminar courses the work of the students seemed to be beyond the average of pre-war years.

There has been great interest in all the advanced work of the department and much demand has been made upon the University for men trained in the several fields of investigation carried on through the medium of palaeontology. Palaeontologists concerned with the purely stratigraphic side of study are requisitioned in all the countries of the world for economic work relating to the sedimentary rocks, especially those containing materials such as coal and oil, which are of themselves fossil remains.

The productiveness of the graduate students during the last year has not appeared as large as in the pre-war period. This is, however, due in considerable measure to the fact that in the preceding years the initiation of new work had been closely limited owing to the drawing away of members of the department during the war.

Continuing the work carried on for a number of years, E. L. Furlong, Assistant in Palaeontology, has made marked advance in the arrangement, indexing, and cataloguing of the collections of the University. At the present time the collections of vertebrates are all numbered, indexed, and catalogued with cross references, so that every specimen and every species in the University collections may be readily located. The same plan has been followed for the invertebrate collections, but it has not been possible to carry the indexing to such a stage of refinement by reason of the much larger number of individual specimens.

All of the type specimens in the University collections have been indexed and are available for use of students visiting the University, for purposes of study and research.

During the last year the following field investigations have been carried out by various members of the department.

1. Chester Stock, Instructor in Palaeontology, has continued his study on the Orinda formation of the Coast Range region. This formation represents one of the most important Pliocene horizons of the Coast Range region, and the study of these beds is of first importance, both in the attempt to understand the sequence of faunas and in the effort to obtain satisfactory information regarding the correlation between Coast Range and Great Basin sequences of deposit.

The result of Mr. Stock's field work has been the accumulation of much stratigraphic information of importance and the securing of a number of specimens of value for use in the preparation of papers under construction.

2. In November, 1919, Mr. Stock, B. L. Clark, Assistant Professor of Palaeontology, Mr. Kellogg, and Mr. Dangerfield visited the Kern River region northeast of Bakersfield for the purpose of collecting vertebrates in the Kern River series in order to determine the age and correlation of this formation and further to collect marine vertebrates in the Miocene beds underlying the Kern River series for study especially of the sea-lion, seal, and whale groups found in this formation.

The result of this expedition was the securing of a collection of much interest, the material being worked over by Mr. R. Kellogg, and prepared for publication in the University of California series.

3. In February, 1920, J. C. Merriam, Professor of Palaeontology and Historical Geology, visited the Ricardo formation of the Mohave Desert for the purpose of examining the beds in the middle portion of the series to obtain a better understanding of the nature of the sediments.

The result of this investigation was the securing of very satisfactory evidence concerning the origin of the Ricardo formation, which seems clearly to have been produced by erosion not unlike that now in progress on the east side of the Sierra Range flanking the Mohave Desert.

On various occasions throughout the whole of the year Professor Clark has made numerous journeys to important localities throughout the whole of the Coast Range region of California for a continued study of the great problem of the marine Eocene to which he has been making important contributions and for a study of the marine Oligocene faunas at the various horizons known on the Pacific Coast region. His work in these expeditions has brought in much material of great interest. The monographs on the Eocene and Oligocene written by Professor Clark will be papers of first importance on palaeontologic literature.

5. Beginning with the end of the spring term of 1920, Professor Clark, in association with several of the students from his department, made a tour of the southern Coast Ranges, examining all the important localities for invertebrate fossils and securing as a part of the material obtained a series of important vertebrate remains from several of the land-laid formations intercalated in the marine series.

6. Following his return from the southern trip, with one student he made a tour through the whole northern Coast Range region, going north to the State of Washington and visiting the important localities of Eocene and Oligocene in the northwestern or Puget Sound region.

The result of this work has been of first importance in the working out of the correlation scheme for marine formations of the Pacific Coast region.

7. According to a plan arranged early in the year Dr. R. W. Chaney, of the University of Iowa, arranged to come to California during the summer of 1919-20 to make a study of the relations of the fossil floras known in the principal Great Basin and Coast Range regions in which remains of fossil plants are known.

Dr. Chaney visited first the famous localities of the John Day region and after a review of this area he made an examination of the principal regions of the auriferous gravel areas of California. Large collections were made from all of these localities and much new and interesting material was secured. The most important contribution of Dr. Chaney's work has been the opening up of the possibility of thorough intensive work on the relationships of these floras, such as has not been possible to anyone concerned with this field of study.

8. Through the kindness of Miss Annie M. Alexander a most important expedition was organized in the spring of 1920 to examine a series of localities ranging from California through northwestern Nevada into the southern portion of the John Day region.

This expedition, which was financed by Miss Alexander and accompanied by her, began its work near Alturas, California, where large and interesting fauna was discovered representing for the first time within the northwestern California region a Miocene fauna of the same approximate age as the Virgin Valley of Nevada and the Mascall of Eastern Oregon. Proceeding into Nevada the party discovered again large and interesting exposures near High Rock Canyon, from which much finer and fuller collections were obtained than had been secured at any previous time.

Extending its work into Nevada in the region of Virgin Valley the party secured most interesting collections of splendid material from the region of Thousand Creek, including a number of specimens which interpret very fully materials of the horse group upon which the department has worked with difficulty for many years past.

Carrying the work into the southern border of the John Day region this expedition made a large collection in the region of Logan Butte, from which comparatively little material has been secured in the last twenty years. In this collection there are a number of forms which are of much interest which have not heretofore been seen in the Pacific Coast and Great Basin region and the total collections secured from the Logan Butte region is of great interest.

Mr. Stock and Mr. Russell, with Miss Alexander's party, joined Dr. Chaney's party in the John Day region and together worked over some of the most important of the plant localities. Altogether the results of this expedition are extraordinarily gratifying and contribute very much to our knowledge of the faunas and floras of the northwestern portion of the Great Basin region.

During the last year Mr. Stock has found it necessary to include in his studies the large amount of important material in eastern museums, and between December, 1919, and February, 1920, he visited the principal eastern museums, paying especial attention to the Edentate collections which furnish the basis of his large monographs of Pacific Coast Edentata. This visit has been of great importance not alone to the Department of Palaeontology, as a contribution to the study of the Edentata. This contact has served also the larger purposes of helping to develop the whole field of the study of the fossil vertebrates through exchange of information regarding the materials in the several museums of the country.

Throughout the year Mr. Stock and Professor Merriam have visited as frequently as possible all of the collections in the West, including especially the great series of material open to use for study at the Museum of History, Science and Art in Los Angeles. It is gratifying to know that the Los Angeles museum is offering every opportunity to the University of California for coöperative study of its magnificent collections.

Philosophy.—The work of the year has been marked by a large increase in the enrollment of students, both in lower and upper division courses. It was found necessary to divide the elementary course in psychology into two sections, given by G. M. Stratton, Professor of Psychology, and Warner Brown, Assistant Professor of Psychology, meeting concurrently. Fortnightly conference sections, conducted by teaching fellows, this year have materially strengthened the instruction in the lower division courses in the Introduction to Philosophy and the History of Philosophy.

Although an unusually large proportion of energy and time has had to go into the teaching of elementary courses, substantial progress in research is reported by the various members of the staff. The addition to the Psychological Laboratory of a colony of rats, supported in part by an appropriation from the Research Fund, has opened new and valuable opportunities for research.

Professor Stratton delivered four lectures in May in New Haven on "Anger in Morals and Religion" upon the Nathaniel W. Taylor Lectureship of the Yale Divinity School.

It is a pleasure to report the appointment of two of our graduate students to travelling fellowships. W. R. Dennes has received an appointment as Rhodes Scholar, and Richard Scofield is a holder of one of the fellowships recently established by the Belgian Government. Both students will devote themselves to the study of philosophy, and more especially to social philosophy.

With regard to the work of research, the following will in a measure indicate the activity in psychology. The studies here described have nearly all been in progress—and in some cases over a very considerable time—before the current year, and it is intended to continue them during the year to come.

The investigations of Miss Olga M. Bridgman, Assistant Clinical Professor of Abnormal Psychology, have been concerned chiefly with defective and delinquent children and adults. She has been making a statistical investigation of the relative difficulty of the different tests in the Binet-Simon series, the study being based upon an examination of approximately five thousand normal, border-line, and defective individuals. She has also, by examinations repeated when necessary, made a study of abnormal children before and after segregation into classes intended to meet their individual needs. In this way she is attempting to determine the value of the special methods followed in these classes. Individual problems of a psychological and social nature presented by delinquent women have also been studied by her.

Under Dr. Bridgman's direction, Miss Jean Walker has been conducting a detailed and comprehensive study of mental defectives in the San Francisco Juvenile Court; she has also begun an investigation of children of pre-school age, with a view to develop tests of moral and social qualities. Miss Margaret H. Russell has studied the value of probation for the delinquent girls of this same court according as they were classed, by mental examination, as normal, border-line, or defective.

E. C. Tolman, Assistant Professor of Psychology, has been investigating, with both human and animal subjects, the effect of favorable and unfavorable conditions of learning upon the retention of what is learned. The work with human subjects, now complete, seems to indicate that the material learned in a favorable hour of the day (such as the middle of the morning), although retained temporarily better than material learned in an unfavorable hour (such as directly after lunch) has no permanent advantage over material learned under unfavorable conditions. The work with animals has only begun. A comparison of the retention of what is learned under the influence of caffeine with what is learned without this drug is being made. He is also studying the difference between literary and scientific ability. A number of tests have been devised which, when given to large classes, have succeeded in roughly distinguishing a literary group from a scientific group.

Under Dr. Tolman's direction Mr. F. J. Adams has been investigating, in rats, the inheritance of the ability to learn. The animal's food is placed in a maze and his speed in learning the proper turns affords an index of his learning power. From an original group tested in this way the "brightest" are separated and mated; as are likewise the "dullest." In their descendants, tested and mated in this same way in successive generations, bright and dull strains seem already appearing.

Warner Brown, Associate Professor of Psychology, has been engaged with the question, Is it possible to predict from preliminary trials or tests whether an individual is likely by practice to become highly skilled or expert? This question is involved whenever it is proposed to select or reject particular individuals, for education along some particular line, on the basis of a preliminary test or examination before they have been trained. Undergraduate students to the number of about eighty have coöperated in this work this year, and three graduate students are basing their theses upon it.

G. M. Stratton, Professor of Psychology, continued a study in the psychology of vision, concerned particularly with passive movements of the eye and with their power to give a false localization to objects.

With the coöperation of the staff and of the graduate students in psychology, he has also been studying the emotions, especially anger, to cast light, if possible, upon the cause and effect of anger, upon the relation of anger to fear and affection, and upon the means of controlling pugnacity. During the year important progress was made in this study, with animals, defective and normal children, insane patients, and normal adults.

Under his direction, Miss Morrison, Assistant in the Laboratory, has been investigating the emotions of the feeble-minded in the State Home at Eldridge. She has made detailed observations upon the character of the general emotional life of these children, particularly upon the emotional difference between the various grades of defectives.

The progress of the investigations by Professor Tolman, Mr. Adams, Miss Morrison, and Professor Stratton has been in no small measure aided—indeed to a degree quite disproportioned to the small sum of money used—by two special grants recommended by the Board of Research.

Physical Education for Men.—The University has been following a new procedure in the physical education of its men during the past six years. On entrance students have been examined not through the traditional methods of tape measurements and artificial strength tests, but through a series of tests of each man's actual physical ability. Jumping, running, fence-vaulting, wall-scaling, body control, boxing,

wrestling, fencing, swimming and rescue were the activities in which the man's ability was tested. That the new procedure has justified itself is evidenced in the report of Colonel Morrow, Commanding Officer of the R. O. T. C. Examining Board which reviewed the military work of the University this spring, that the University of California was doing the most comprehensive work in physical education in the country.

Research in the department has been largely concerned with the problems of popularizing physical education through the agency of physical efficiency tests and other studies dealing with the methods of adapting the various sports for the purposes of physical education. Data collected over a period of four years in collaboration with S. J. Holmes, Professor of Zoology, when compiled will afford interesting material on the subjects of heredity and eugenics.

A new method of physical examination, involving the scoring of men's physical development, conformation, and health in a manner similar to that used in stock judging, with an original scheme of anthropometric photography is in the process of experimentation; the aim is to interest individuals in their bodily conformation and development in a practical, easily understandable way.

Statistical researches with reference to the control of infectious skin diseases frequently found in gymnasias and swimming pools are being conducted. Quarterly statistical reports affording accurate data and an index to the relative values and specific purposes of different types of athletic activity, such as intercollegiate athletics, intramural athletics, developmental athletics, and recreational athletics are also being systematically compiled.

Establishing of standards of physical efficiency as the logical basis for procedure in the physical education of all ages is gaining recognition throughout the country. Standards are being compiled for the army, and a sub-committee of the National Committee on Physical Education is making standard investigations. The primary and secondary schools of California are experimenting on standards of physical efficiency as well as the Department of Physical Education. It is hoped that a proper coördination between the work in the high schools and the University will result in a vitalization of this work in the high schools. At present the relative number of freshmen who must be classed as physically ignorant on entering the University is both astonishing and pitiable.

On the basis of the findings of the physical efficiency tests at the University, men are assigned to the sports or special training classes for correction in their particular shortcomings. Students who pass all phases of the tests may select their own athletic activities. Eighteen different courses are offered, involving some ninety sections and a schedule from eight o'clock to six o'clock. The present limited equipment of the department, as gymnasias, swimming pools, and athletic fields, hampers somewhat the complete success of this broad program.

Training of teachers of physical education in normal and summer sessions is carried on in accord with the teacher-training regulations of the School of Education. University of California men so trained are in great demand.

Activity of the department in the promotion of intercollegiate athletics is evidenced in the tables hereafter submitted. Important contests in every sport were won by varsity teams in boxing, wrestling, fencing, and gymnastics, as well as in freshman and weight basketball, football, and baseball. C. M. Price, Instructor in Physical Education, conducted

the Varsity baseball team during its recent eastern tour when it won seventeen of twenty-seven contests. A measure of credit for these victories is justifiably due to the coaching by members of the department.

The following statistics show that during the fall semester 2299 men were enrolled in the courses in physical education, of whom ninety-two elected to register without credit. This number was increased to 2321 and 261 respectively in the fall term.

TABLE I.

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA,
OCTOBER 20, 1919

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	For Credit Required	For Credit Elective	Total	Without Credit Elective	Grand Total
13	American Football.....	90	8	98	22	120
1	Gymnastics.....	553	4	557	6	563
2	Special Gymnastics.....	37	4	41	4	45
3	Track.....	228	...	228	...	228
4	Baseball.....	33	22	55	16	71
5	Basketball.....	121	9	130	5	135
6	Tennis.....	87	...	87	...	...
7	Boxing.....	372	70	442	2	444
8	Wrestling.....	145	28	173	1	174
9	Fencing.....	12	...	12	...	12
10	Swimming.....	139	85	224	2	226
12	Soccer.....	17	6	23	34	57
15	Handball.....	...	24	24	...	24
17	Elem. Tumbling.....	47	10	57	...	57
111	Adv. Gymnastics.....	15	...	15	...	15
112	Adv. Boxing.....	...	9	9	...	9
112	Adv. Wrestling.....	30	2	32	...	32
Totals.....		1926	281	2207	92	2299

EXHIBITIONS

Fencing.....	2
Gymnastics.....	8
Wrestling.....	3
Total.....	13

PARTICIPATION IN INTRAMURAL SPORTS FROM AUGUST 24 TO OCTOBER 20, 1919

Inter-class Football.....	87
Inter-class Swimming.....	33
Inter-fraternity Baseball.....	350
Tennis Tournaments.....	34
Boxing.....	40
Handball.....	26
Track: Inter-frat. Meet Sept. 25, 26, 852 entries.....	460 competitors
Inter-club Meet Oct. 2, 3, 330 entries.....	220 competitors
Inter-class Meet Oct. 9, 10, 200 entries.....	180 competitors
"All Star Team" vs. Varsity, Oct. 16, 17.....	120 competitors
Total.....	1550

MEN TRAINING FOR INTERCOLLEGIATE

American Football, Varsity -30, Freshman -68.....	98
Soccer, Varsity -11, Freshman -11.....	22
Crew, Varsity -30, Freshman -35.....	65
Wrestling, Meet with "Gobs," Sept.....	4
Boxing, Meet with "Gobs," Sept.....	4
Total.....	193

TABLE II.

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA
MARCH 1, 1920

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	For Credit Required	For Credit Elective	Total	Without Credit Elective	Grand Total
1	Gymnastics.....	420	14	434	....	434
2	Special Gymnastics.....	58	4	62	2	64
3	Track.....	185	41	226	51	277
4	Baseball.....	78	11	89	20	109
5	Basketball.....	136	13	149	30	179
6	Tennis.....	105	18	123	14	137
7	Boxing.....	373	56	429	13	442
8	Wrestling.....	225	49	274	17	291
9	Fencing.....	4	6	10	7	17
10	Swimming.....	99	11	110	13	123
12	Soccer.....	10	2	12	....	12
13	Rugby Football.....	5	2	7	23	30
16	Playground Recreation.....	4	....	4	....	4
17	Elementary Tumbling.....	43	7	50	2	52
18	Crew.....	44	11	55	50	105
111	Advanced Tumbling.....	4	2	6	7	13
112	Advanced Boxing and Wrestling	5	7	12	12	24
300	Practice Teaching.....	....	8	8	....	8
Totals.....		1798	262	2060	261	2321

PARTICIPATION IN INTRA-MURAL SPORTS FROM JANUARY 19 TO MARCH 1, 1920

Inter-class Boxing.....	21 Men
Inter-class Wrestling.....	20 Men
Inter-class Fencing.....	6 Men
Inter-class Gymnastics.....	13 Men
Handball.....	26 Men
Total.....	86 Men

EXHIBITIONS STAGED BY THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Boxing in 5 different exhibitions.....	28 Men
Wrestling in 3 different exhibitions.....	20 Men
Total.....	8 Events

MEN TRAINING FOR INTER-COLLEGIATE ACTIVITIES JANUARY 19 TO MARCH 1, 1920

TRACK:	TENNIS:	RUGBY:	GYMNASTICS:
Varsity.....130	Varsity..... 24	Varsity..... 30	Varsity..... 15
Freshman 100	Freshman... 15	Freshman.. 0	Freshman... 0
—230	— 39	— 30	— 15
BASEBALL:	BOXING:	SOCCER:	HANDBALL:
Varsity..... 70	Varsity..... 40	Varsity..... 20	Varsity..... 14
Freshman 90	Freshman... 40	Freshman... 0	Freshman... 0
—160	— 80	— 20	— 14
BASKETBALL:	WRESTLING:	CREW:	TOTAL:.....
Varsity..... 40	Varsity..... 18	Varsity..... 40	839
Freshman 52	Freshman... 16	Freshman... 50	
Wt. Teams 35	— 34	— 90	
—127			

TABLE III.

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA
MAY 1, 1920

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	Credit Required	Credit Elective	Total	Without Credit Elective	Grand Total
1	Gymnastics.....	361	23	384	1	385
2	Special Gymnastics.....	40	4	44	2	46
3	Track.....	198	50	248	10	258
4	Baseball.....	66	8	74	17	91
5	Basketball.....	132	13	145	....	145
6	Tennis.....	104	24	128	2	130
7	Boxing.....	328	49	377	11	388
8	Wrestling.....	145	30	175	7	182
9	Fencing.....	7	6	13	....	13
10	Swimming.....	105	9	114	....	114
12	Soccer.....	12	2	14	....	14
13	Rugby Football.....	5	....	5	....	5
16	Playground Recreation.....	4	....	4	....	4
17	Elementary Tumbling.....	42	6	48	2	50
18	Crew.....	26	6	32	....	32
111	Advanced Tumbling.....	2	8	10	1	11
112	Advanced Boxing and Wrestling	5	7	12	12	24
300	Practice Teaching.....	....	8	8	....	8
	Failures in Semester's work.....	110	11	121	12	133
	Totals.....	1692	264	1956	77	2033

PARTICIPATION IN INTRA-MURAL SPORTS FROM MARCH 1 TO MAY 1, 1920

Inter-Fraternity, Basketball.....	343 Men
Inter-Fraternity, Tennis.....	40 Men
Open Handball.....	28 Men
Total.....	411 Men

EXHIBITIONS STAGED BY THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Boxing at Davis.....	8 Men
Wrestling at Davis.....	8 Men
Gymnastics.....	40 Men
Baseball at Davis.....	11 Men

MEN TRAINING FOR INTER-COLLEGIATE ACTIVITIES MARCH 1 TO MAY 1, 1920

TRACK:	GYMNASTICS:	CREW:
Varsity.....130	Varsity..... 15	Varsity..... 40
Freshman.....100	Freshman..... 0	Freshman..... 50
—230	— 15	— 90
BASEBALL:	BOXING:	HANDBALL:
Varsity..... 70	Varsity..... 40	Varsity..... 14
Freshman..... 90	Freshman..... 40	Freshman..... 0
—160	— 80	— 14
TENNIS:	WRESTLING:	TOTAL:.....662 Men
Varsity..... 24	Varsity..... 18	
Freshman..... 14	Freshman..... 16	
— 38	— 34	

Physical Education for Women.—Strengthening of the staff of the department has been effected with the appointment of three new members. Sarah Russell Davis, Assistant Professor of Physical Education for Women, formerly of the Department of Hygiene, Wellesley College, has charge of all corrective and remedial work for the students in required courses and will conduct classes in Kinesiology, Massage, Physical

Diagnosis and Corrective and Remedial Gymnastics. Josephine Guion has been named Instructor, and Edith Ueland has been appointed Assistant. Edna Lee Roof, Instructor in Physical Education for Women, has been on leave of absence the last year. Miss Maude Cleveland, Assistant Professor of Physical Education for Women, who resigned in the spring of 1919, has received the Distinguished Service Medal for her services during the war. She is now in Antwerp, where she will remain indefinitely.

Seventy per cent increase is noted in the enrollment this year over last. Of the 7955 students registered, 2396 in the first semester, and 2261 in the second were enrolled in courses for credit, while 1503 in the first and 1795 in the second were enrolled without credit. During the first four weeks of the university year, 1592 students were examined by the department and assigned to regular, restricted, or special corrective sections according to the physical condition of the student.

There were 4057 enrollments in required work during the year. Of this number 3457 were in regular sections, 358 in restricted sections, and 242 in special corrective sections. Classes averaged eighty-five students. Maximums of seventy for regular sections, forty in restricted sections, and twenty in special corrective sections ought not to be exceeded.

Improvement in the physical condition of entering students noted by the examiners is due no doubt to better physical education instruction in the elementary and secondary schools as a result of the State Physical Education Bill of 1917.

The department is most desirous of introducing more games and free play as a part of the required work. The present equipment and athletic space make this impossible at the present time. The swimming requirement was deferred during the last year as the Hearst Swimming Pool was closed.

Students in need of special work are required to report once a week for fifteen minutes to special classes in addition to their required work until sufficient improvement is observed. During the year 1086 women were enrolled in these classes. The department took care of 268 students during the influenza period and referred 480 students to the Infirmary for special examination and treatment. In other ways the department has endeavored so to instruct the student that even after she leaves the University she will be benefited.

Miss Eisenhardt, Instructor in charge of dancing in the department, assisted by Miss Ueland, conducted special classes for students who were to take part in the Partheneia. Some 458 students were enrolled.

The department has reorganized and developed its teacher-training courses in such a way that the University will remain upon the accredited list and that graduates will continue to serve the state in a most effective manner. High school recommendations through the School of Education are awarded to students completing the department's five-year course. The department further plans to offer a special course in the training of women for industrial rehabilitation.

Honor students are given opportunity for research in the department and in connection with allied departments such as anatomy, education, hygiene, physiology, psychology, zoology. Miss Edith Ueland, an assistant in the department, received her M.A. degree in psychology upon the completion of a year's work on the problem of Coördination and Rhythm.

There were 877 women students in athletic activities, a large proportion engaging in sports. A new system of qualification enabled the instructors to begin their work earlier than in any previous year.

Intercollegiate games in hockey were played with Stanford University, and handball and rowing races with Mills College. The Annual Fall Field Day was held in November. The Spring Field Day was held April 10. The University was represented at an intercollegiate conference for women's athletics held in Seattle, Washington, May, 1920.

A large athletic field is one of the most urgent needs of the department and of the women students. The installation of a heater and filtering system in the Hearst Swimming Pool will offer an opportunity for a very popular form of wholesome exercise. The department and women students appreciate the new floor in the main gymnasium of Hearst Hall.

The transformation of the kitchen into a surgical dressing room and finally into a model corrective gymnasium has met one of the greatest needs of the department. Students assigned to special corrective and remedial exercises no longer need climb to the top of Hearst Hall. Apparatus from the old corrective gymnasium was removed and new apparatus added. The gymnasium is finished in white and is continuously flooded with sunshine. Conducting of physical examinations in this room during the spring semester was a marked improvement over that in the canvas partition booths on the stage of Hearst Hall. Hereafter all physical examinations will be held in this room. It is no exaggeration to state that no one improvement could so materially affect the well being of the entire student body and the efficiency of the department as this new corrective gymnasium.

The department is in immediate need of an increase in staff to care for the growing enrollment and to make possible research; a new fireproof gymnasium with two large gymnasium floors, two accessory gymnasia, adequate showers and dressing rooms, offices, examining rooms, lecture rooms, instructors' showers and dressing rooms, and athletic field. Until this new gymnasium and equipment are available, the department needs an additional shower house and an office for the administration of the swimming pool; 750 steel lockers similar to those already installed; three instructors' offices, one adjacent to the corrective gymnasium and two off the stage of the main gymnasium; one of the present offices equipped as a shower and rest room for the department instructors, and an accessory gymnasium adjoining the corrective gymnasium for remedial work.

In using Hearst Hall beyond its capacity students are inconvenienced and the department is handicapped in its work.

Physics.—The increase in the number of students in this department was even greater than had been anticipated. In January, 1919, 805 students were enrolled; in September, 1919, the number was 1660. It was found necessary to abandon laboratory work for freshmen pre-engineering students and to give instruction through lectures and recitations. In five of the lecture sections the enrollment exceeded the capacity of the lecture room. The six small rooms available for research were all used by members of the staff and graduate students. In addition to members of the staff, at least ten graduate students will need research accommodations next year, which can be secured only by abandoning certain upper division laboratory courses and crowding the graduate students in the rooms thus obtained. Such conditions are incompatible with effective research.

It is evident that the most pressing need of the department is for more space. It is to be hoped that means may speedily be found for the erection of a suitable building. In the absence of such relief, the alternative seems to be the limitation of numbers.

Despite adverse conditions, members of the staff were able to resume research activities in some measure. E. P. Lewis, Professor of Physics, has made progress on the investigation of the continuous spectrum of hydrogen in the extreme ultra-violet and its use in securing absorption spectra. Reports on the last two investigations were made at the Seattle meeting of the Physical Society. E. E. Hall, Professor of Physics, has continued his study of vibrations in buildings and is designing a direct-reading instrument for measuring fluctuations in wind pressure. R. S. Minor, Professor of Physics, has resumed his investigation of the optical properties of metals in the ultra-violet, and a master's thesis in this field has made progress under his direction. W. J. Raymond, Associate Professor of Physics, has nearly completed a paper on a mechanical device for the elucidation of alternating current phenomena and another on the damping of a dynamical system, and has designed a new type of differential electro-dynamometer and a harmonic synthesizer. L. T. Jones, Assistant Professor of Physics, has investigated the relation between the velocity of sound and that of its source. R. B. Abbott, Instructor in Physics, has studied the latter problem by a different method, and presented a paper describing the results at the Seattle meeting of the Physical Society. He has also been studying the polarization and resistance of primary cells and the characteristics of three-electrode vacuum tubes. R. T. Birge, Instructor in Physics, has published articles on the quinone phenolate theory of indicators (with S. F. Acree), the dispersion of air, and the most probable value of the Planck constant h . He has nearly completed part three of an article on the mathematical structure of the aluminum band series and another on the structure of the aluminum band 4842. E. Dershem, Instructor in Physics, has resumed his experiments on X-ray spectra, and has also directed the work of Miss Cummings, Lick Fellow, in the design of an electrometer and the tests of photoelectric cells for stellar photometric work at the Lick Observatory. C. H. Kunsman has completed a doctor's thesis on the penetrating radiation of the atmosphere and its dependence on temperature. By reason of conditions following the war, the number of graduate students was small, and few of these were sufficiently advanced to undertake research. Conditions for next year seem more promising, as fourteen assistantships have been filled by students of full graduate status.

A survey of a number of the leading universities of the country by correspondence or by visits has revealed a general scarcity of competent teachers and qualified graduate students in physics. This is due to the fact that the suddenly created demand for physicists in industrial laboratories has exhausted the limited available supply. To do its part in the training of teachers and leaders in research, as well as to supply the industrial demand, this University should offer salaries and facilities which are not too far inferior to those offered by industrial laboratories, and should add to the staff men of exceptional ability in prosecuting and directing research.

The staff was strengthened at the beginning of the year by the appointment of W. H. Williams, late colonel U. S. A., and Elmer Dershem, late of the University of Illinois, as instructors. W. C. Pomeroy and C. T. Dozier were added to the staff.

Political Science.—This department has been called upon during the current year to meet a pressure upon its facilities for instruction, due to the increased enrollment, in a greater degree than most of the other departments of the University. The advancement of Dr. David P.

Barrows, Professor of Political Science, to the presidency of the University, and the absence on leave throughout the year of Edward Elliott, Professor of International Law and Politics, and the release of Ludwik Ehrlich, Lecturer in Political Science, to return to Poland, reduced the teaching force of the department at a time when a maximum force was imperatively demanded. The gap has been partially filled by the presence of Edgar Dawson, Professor of American Government, of Hunter College, and by E. M. Sait, Lecturer in Political Science, of Columbia University.

Special mention should be made of Professor Dawson's work in promoting more adequate training for teachers of civics. His courses have been largely attended by prospective teachers. He has carried on investigations of the present status of the teaching of civics in California and has endeavored to advance general instruction in this important field.

Within the department this year there have been conducted two bureaus; one on "International Relations" and one on "Public Administration" under the direction of C. E. Martin, Lecturer in International Law and Science, and J. R. Douglas, Instructor in Political Science, respectively. With limited funds for the employment of assistants and for the other necessary expenditures, the work of these bureaus has been somewhat handicapped. The Bureau of Public Administration has carried on important investigations for the National Research Council on the subject of "Scientific Research in the State Government of California" and has collected much valuable material in the field of municipal government. During each semester the department's specially conducted series of lectures on subjects of current interest were largely attended by the university community.

Public Speaking.—During the academic year just passed the demand for lower division instruction in public speaking was greater than in any previous year. Lack of sufficient instructors prevented the department from meeting the demand except to a limited extent. A larger number of applicants than usual were admitted by removing the enrollment limit (25) previously governing the size of the different sections. This expedient, however, was found to be unsatisfactory as it resulted in lowering the effectiveness of the instruction. Moreover, even as an emergency measure, it failed to account for all who applied for admission. Nearly 700 students were denied enrollment.

The work of the department was still further handicapped by the withdrawal of two members of the teaching staff who reluctantly accepted tempting offers from business firms. Of these withdrawals that of N. B. Drury, Assistant Professor of Forensics—whose training and experience made him a most valuable member of the department—is most keenly felt. During the second semester Miss Florence Lutz, Lecturer in Interpretative Reading, was compelled by illness to take out a leave of absence.

Following a custom inaugurated two years ago Miss Lutz, during the first semester, gave a series of four public readings. In the second semester, C. D. von Neumayer, Associate Professor of Public Speaking, Miss Elizabeth Mack, Lecturer in Voice Culture, and Mrs. Marian Stebbins gave a reading of Browning's "In a Balcony." Under the direction of Professor von Neumayer, students in the department presented two sets of modern one-act plays. These plays were also open to the public.

M. C. Flaherty, Professor of Forensics, is engaged in investigating some of the problems centering about the relation between the standards of spoken and written English, with special reference to idioms.

D. E. Watkins, Assistant Professor of Public Speaking, has been engaged in developing a combination of the dictaphone and the "magnavox" for illustrative purposes in his classes in vocal technique. He has also carried on research regarding the oral English of students by means of stenographic reports of speeches made in the classroom. In addition, Professor Watkins has had charge of the organization of classes in public speaking within the Extension Division.

Since his return to the University in January, 1920, George Boas, Assistant Professor of Forensics, has been devoting considerable time to a study of the relation of the philosophy of Plotinus to that of his Greek forbears. Some of the results of this research were presented in the form of three lectures delivered under the auspices of the Department of Philosophy, with the titles, "The Esthetics, the Ethics, and the Theory of Knowledge of Plotinus."

One of the by-products of this investigation was the bringing to light of the fact that the first translation of the *Enneads* into English is not a translation from the Greek original but is a word-for-word rendering of Bouillet's French translation. The proofs of this assertion are being printed in "The Journal of Philosophy, Psychology, and Scientific Methods."

Sanskrit.—Two full courses for undergraduates in the Sanskrit language, and one half-course involving research in ancient Indian religions were given. Two other half-courses of a more popular character, requiring no knowledge of the language, had an unusually large attendance. One candidate for the degree of Ph.D. chose Sanskrit as a minor subject. There was published in December, 1919, a volume called "Relatives," containing translations of Sanskrit poems of various date and provenience.

Semitic Languages.—The work of the department has been conducted as scheduled during the year. M. A. Meyer, Lecturer in Semitic Literature and History, and H. H. Powell, Lecturer in Hebrew, have taken charge of the classes in the absence of William Popper, Associate Professor of Semitic Languages, who will resume his duties next year. Under the circumstances no research has been undertaken, except by Dr. Popper who is studying while absent.

Slavic Languages.—During the year instruction was given in the Russian, Polish, Bohemian, and Serbo-Croatian languages, and lecture courses were given on Russian novelists of the nineteenth century, recent Russian literature, Polish and Bohemian literature, the political development of modern Russia, Russian commerce and industry, and the Serbian people.

Since 1914-15 there has been a steady increase in the number of students taking courses in the department. In 1919-20 the registration was 422 (116 in language courses); in 1918-19 the corresponding figures were 187 (62 in language courses); and in 1914-15 there were 50 (15 in language courses). This may be an indication of the general growth of interest in the Slavic peoples throughout our country.

During the year M. Krunich, Instructor in Serbo-Croatian and French, has done much lecturing in behalf of the California Committee for Relief in Serbia and France. His services have been greatly appreciated by that body. A. S. Kaun, Instructor in Russian, has continued his work as lecturer for the University Extension Division.

Spanish.—The position of Professor Ramón Jaén, left vacant by his untimely death in March, 1919, has been filled by Erasmo Buceta, Assistant Professor of Spanish, a native of Spain, and a former member of the Romanic faculty of Johns Hopkins University. In memory of Professor Jaén a yearly prize has been instituted, to be awarded for the best translation into English of some modern Spanish masterpiece.

Graduate work and advanced investigation should henceforth receive more attention owing to the great increase of our library facilities. Mr. J. C. Cebrian has added several thousand volumes to the Spanish collection, including rare books in many branches of literature and science.

The department has devoted much time to extensive investigations in the history and literature of Spain. Rudolph Schevill, Professor of Spanish, S. G. Morley, Associate Professor of Spanish, and Professor Buceta, in the course of the year, have published various papers. Professor Schevill was invited by the Sociedad de Menendez y Pelago to represent the United States at the inaugural ceremonies of the institution which took place at Santander, in August, 1919.

Zoology.—At the beginning of the year C. A. Kofoed, Professor of Zoology and Assistant Director of the Scripps Institution for Biological Research, returned to the department from his service as a major in the Sanitary Corps in the United States Army. Dr. Franklin P. Reagan, Ph.D., Princeton, 1916, and instructor in the Illinois Medical College, added to the staff as Assistant Professor, took charge of the work in comparative anatomy formerly given by A. L. Barrows.

In common with other departments this year, the Zoology department faced an emergency enrollment. In Zoology 1A, with a maximum provision for 312 students in the laboratories, the registration approximated 500 students. Extra laboratory sections and two additional teaching fellows were added. A similar overcrowding occurred in Zoology 108, prescribed in medicine, and in Zoology 117. Other classes in the upper division have been universally well attended. Notwithstanding the congestion, results in teaching for the year have been good. The total enrollment was about 1700 students as compared with 1100 last year.

The department has made a serious effort to strengthen its position in teaching and in research by eliminating certain courses of instruction for next year. By this elimination more time will be given to the building up of those courses most fundamental to the science of zoology and at the same time greater opportunity is afforded for constructive work. General Zoology for the first year has been condensed so that in the second semester the essential parts of embryology, formerly given in Zoology 108, are included. This reduces the time required of pre-medical students from a year and a half to a year in zoology. It leaves such students free, in their third year, to select any other courses in the department which they may desire.

Despite the demands made on the department by the extra amount of teaching the department research activities have steadily progressed.

Professor Kofoed completed fourteen papers on important zoological problems. These include a study of the relation of hookworm to morbidity and mortality in 2300 men at Camp Bowie, Texas; hookworm and intelligence; intestinal parasites; the structure and relationships of the iodine cysts of human faeces; protozoan infections in U. S. Army troops; carriers of Amoebiasis; hookworm and Amoebiasis in California; morphology and mitosis in *Chilomastix*, a common flagellate of the human intestine; nomenclature of human intestinal flagellates; a new morphological interpretation of *Noctiluca* and its bearing on the

status of the Cystoflagellata; Balantidium from Indian frogs; unarmored Dinoflagellata; human intestinal protozoa; pelagic protozoa of the expedition to the eastern tropical Pacific.

Graduate students with Professor Kofoed conducted research on the following problems: balantidium of the pig; neuromotor apparatus of Spirostonium; the adjusting of osmotic pressure of fixers to living protoplasm; isolation of the toxin ascaron from the round worm of the pig; mitosis in some coprophilic flagellates; ciliates of the appendix of the horse; chilomastix in the rat; amoeba of the rat; new methods of detecting human amoebiasis.

Undergraduate students with Professor Kofoed conducted the following research: work on blackhead of the turkey and investigation of the possibility of the English sparrow being a carrier of disease; experiments on culture methods for human intestinal flagellates; testing California snails as carriers of the Japanese blood fluke.

S. J. Holmes, Professor of Zoology, has just completed a book on the factors of evolution in man, the aim of which is to give a critical estimate of our knowledge on this subject and to discuss a number of theories which are in vogue at present. As an undertaking growing out of the work, and originally begun as a preparation for it, he has compiled a bibliography of books and articles bearing on the factors of human evolution. This will constitute an additional volume since already about 10,000 titles have been amassed.

Graduate students with Professor Holmes conducted research on the following problems: coördination of reactions in the behavior of the starfish; variability in the fruit fly, *Drosophila*; human heredity; relation between the differential mortality of the sexes in the first year of life and the severity of the infant death rate; heredity of deafness and heredity of eye defect; relation between longevity of offspring and parental age at the time of conception.

Mention may be made of the material being gathered by the system devised by Professor Kleeberger and Professor Holmes for collecting information on physique, heredity, etc., from students in the gymnasium, and their parents. Already several thousand well filled records have been secured which will make possible the solution of a number of problems of interest. In connection with records of scholarship it will be possible to work out correlations between scholastic standing and various physical qualities, nationality and race.

J. F. Daniel, Professor of Zoology, has continued work on certain points in the anatomy of elasmobranch fishes. Two of his students have also contributed work on elasmobranch anatomy.

J. A. Long, Assistant Professor of Embryology, in coöperation with Professor Evans, has been bringing to completion and publication a piece of research on the oestrous cycle in the rat, the result of several years' work on the normal anatomy and physiology of reproduction in this animal. In addition work is being conducted on the influence of organs of internal secretion on the oestrous cycle in the rat. Other investigations, also with Professor Evans, have been started on the reproductive cycle in other animals, and on the embryology of the rat.

Undergraduate students with Professor Long conducted the following research: the oestrous cycle in mice; the histology of the rupture of the vaginal membrane; the closing of the eye in late foetal stages; the morphogenesis of the nervous system in an early embryonic stage; the effect of suckling on the ovulation cycle; the earliest stages of body formation.

F. P. Reagan, Assistant Professor of Zoology, has continued the preparation of figures for a work on the comparative anatomy and development of the azygos veins, which has covered seven years. The work will doubtless be finished by the beginning of the next academic year. He is also devoting some time to the staining reactions in the erythrocyte-series of developing teleosts.

Graduate students with Professor Reagan conducted research on the following problems: adult shoulder-draining in mammals; adult azygos veins of mammals. Undergraduate students with Professor Reagan conducted the following research: study of the shoulder-drainage of the embryonic and foetal pig; study of the development of the coeliac axis in relation to the migration of related viscera.

Miss Pirie Davidson, Acting Instructor in Zoology, has done the following research: further work on the study and comparison of the microscopic structure and gross modification of the teeth of some ungulates; a study of the University of California collection of the deer of the Rancho La Brea; work on the ossification of the vertebral column of some amphibia.

ALUMNI SECRETARY

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit the report of the Secretary of the California Alumni Association for the year ending June 30, 1920.

With the conclusion of the war the Association completed the Honor Roll, giving in detail the names of those who gave their lives for the great cause, those who were wounded, and those who gave a measure of service. The record is regarded as complete, though we are still receiving an occasional correction or addition. The report has been printed and somewhat extensively distributed.

Bureau of Occupations.—By October, 1919, the work of the Military Bureau had ceased and the Alumni Council took action to develop the Military Bureau into the Bureau of Occupations. George D. Mallory, '15, was named manager. The bureau secures employment for both men and women graduates of the University, secures employees for the various administrative departments of the University, and assists the men students in securing work which will aid them in financing themselves. The following gives a resumé of the work done by the bureau:

Incoming mail	1,173
Outgoing mail	1,329
Personal calls	1,375
Recommendations	578
Placements	172

Classes of employment which have been filled through the agency of this office include the following:

Accountants, advertisers, agricultural architects, agriculturists (fertilizer salesmen), agricultural draftsmen, auto salesmen, bacteriologists, men of banking experience for foreign service, men of banking experience for domestic service, cafeteria manager, chemists—paint, sugar, city manager, draftsmen, employment managers, engineers—civil, construction, electrical, irrigation, marine, mechanical, mining,, railroad, sanitary—foreign trade experience of interest—export, import, banking—governess (foreign travel), geologist, insurance, manufacturing, merchandising, newspaper men, office managers, physical directors, public health workers, public welfare workers—playground directors, boys' camp director, probation officer, truant officer, vocational directors for returned soldiers, chamber of commerce organizers, welfare workers on Hawaiian plantations, etc., salesmen—bond, insurance, farm implements, fertilizer—secretaries, statisticians, stenographers, typists.

Women's Section of the Bureau of Occupations.—The women of the Bureau of Occupations superintended the third Vocational Conference for Undergraduate Women, held in March, 1920.

Board of Visitors.—An amendment to the Constitution of the Alumni Association was adopted which creates a Board of Alumni Visitors. Following is the text of the amendment:

ARTICLE XII

SECTION 1. A Board of Alumni Visitors is hereby created to consist of five members of the Association, who shall be appointed annually in August by the President of the Association in conference with the Council, to serve for the period of one year. The President of the Association shall be ex-officio a member of said Board. Vacancies in the Board shall be filled by the President in conference with the Council.

SECTION 2. It shall be the duty of said Board of Alumni Visitors to render such assistance as is possible in the solution of the problems from time to time confronting the University and in the development of the efficiency of the University; to that end, said Board shall, at least once in each academic year, visit the University, and annually report to the Council in writing in respect of the work and condition of the University.

SECTION 3. The Council shall have power to provide rules and regulations for the organization and procedure of said Board of Alumni Visitors, and the power to delegate to said Board of Alumni Visitors the selection of sub-committees from the general membership of the Association, or from those eligible to membership in the Association, to assist said Board in the performance of its duties.

SECTION 4. Reports of said Board of Alumni Visitors, when approved by the Council, shall be filed with the Board of Regents, and submitted to the membership of the Association in such manner as the Council may determine.

Following are the rules and regulations covering the Board of Alumni Visitors:

RULES AND REGULATIONS OF THE COUNCIL OF THE CALIFORNIA ALUMNI ASSOCIATION GOVERNING BOARDS OF ALUMNI VISITORS IN ACCORDANCE WITH SECTION 3 OF ARTICLE XII.

1. The President of the Association shall be Chairman of the Board of Alumni Visitors. Immediately after their appointment, the members of the Board shall elect a Vice-Chairman and a Secretary. Election shall be by ballot. The Vice-Chairman shall be a member of the Board; the Secretary need not be a member of the Board.

2. After the organization of the Board, the Chairman of the Board shall appoint, from the members of the Board, Chairmen for the following sub-committees of the Board, which are hereby created: Committee on Graduate Division and Research; Committee on Administration and General Education Policy; Committee on Professional Schools and Colleges; Committee on College of Letters and Science, and Committee on Student and Faculty Welfare. Each of said sub-committees shall consist of five members, one of whom shall be the chairman. The other members of the committees shall be appointed by the Chairman of the Board.

3. Said sub-committees shall at least once each year visit those departments, divisions, schools or colleges of the University with which they are respectively concerned to inquire into the problems, needs and efficiency thereof, and shall promptly thereafter report to the Board thereon.

4. The Board shall consider the reports of its said sub-committees, and, after approval, transmit them to the Council with such comment and suggestion as the Board may deem advisable, and with such special or additional report as the Board may adopt. Said reports shall be filed with the Council at least thirty days prior to the annual meeting of the Association next following the appointment of the members of said Board of Alumni Visitors.

5. Whenever in the judgment of said Board it is advisable to create one or more additional sub-committees to inquire into any special or particular matter or problem affecting the University, the Chairman of the Board is hereby granted power to appoint such committee or committees and to specify the powers and duties thereof.

6. Reports of said Board, and all reports submitted to it by any sub-committee thereof, shall be preserved in well-bound books, and shall be appropriately indexed for the use of the Alumni, faculty, and regents.

Henry Morse Stephens Memorial Fund.—Under the direction of Chaffee E. Hall, '10, the Stephens' Memorial Fund Campaign was conducted with considerable success. Approximately \$250,000 has been pledged toward the erection of the Memorial Building. Campaigns were conducted in every community where alumni were to be found to further this good cause.

The Fortnightly.—The publication of the *Fortnightly* was continued during the year. Harrold B. Knowles has acted as business manager. Through his efforts the advertising in the *Fortnightly* has increased to such an extent that it has necessitated enlarging the magazine from sixteen to a twenty-four page booklet. The largest issue of the *Fortnightly* ever put forth was in May and consisted of ninety-six pages. It was published in connection with the Summer Session and was known as the Summer Session issue.

Charter Day Banquet for President Barrows.—Seven hundred and fifty alumni and their guests gathered in the Hotel Oakland, on Charter Day to honor David P. Barrows, the first alumnus to be president of the University of California.

Alumni Clubs.—During the past year alumni clubs were formed at San Jose and at Salt Lake City, Utah. University interests were furthered by those already in existence, namely: Berkeley, Fresno, Los Angeles, Redding, Sacramento, San Benito, San Diego, Santa Barbara, Sonoma County, Stockton, Washington, D.C., New York City, Portland, Oregon, Philippine Islands, Honolulu.

Football Dinner.—Under the management of Alice Porterfield, '08, one hundred and fifty women celebrated the occasion of the Big Game at the Town and Gown Club in Berkeley. The men, with a delegation of three hundred, gathered at the Commercial Club in San Francisco.

Secretary.—Homer Havermale resigned as secretary of the Association in November, 1919. Donovan O. Peters was appointed secretary to fill the vacancy. The Constitution of the Association was amended so that the secretary's office would be appointive rather than elective. Mr. Peters filled the position until a permanent secretary was named. On May 1, 1920, R. E. Bosshard, '09, was named permanent secretary.

Membership.—During the year 1919-20 the Association comprised 4349 actual paid members, of whom 242 were life members. There were 4113 paid subscribers to the *Fortnightly*. A campaign is now under way to increase the membership in the Association to the largest possible number. For this purpose, the slogan, "The Largest Alumni Association for the Largest University," has been adopted.

Offices.—In June the offices of the Association were moved from Room 201, California Hall, to Room 113. The new offices are sufficient to give adequate space for the growing needs of the Association.

Officers.—In May the annual election of officers took place. The following were elected:

President, Warren Gregory, A.B. 1898.

Vice-Presidents, Judge Russ Avery, B.L. 1894, and Justice William H. Waste, Ph.B. 1891, LL.B. 1894.

Treasurer, Robert G. Sproul, B.S. 1913.

Councillors elected whose terms expire 1922 are: Esther B. Phillips, A.B. 1909, Mrs. Warren Olney, Jr., A.B. 1895, Walter A. Starr, Ph.B. 1897, Milton Newmark, Ph.B. 1899, Clotilde Grunsky, B.L. 1914.

Councillors whose terms expire 1921 are: Frank Otis, A.B. 1873, M.A. 1876, Oscar Sutro, B.L. 1894, M.A. 1896, Douglas Brookman, B.L. 1910, Chaffee E. Hall, B.I. 1910, Herman Phleger, B.S. 1912.

Respectfully submitted,

R. E. BOSSHARD, Secretary.

APPOINTMENT SECRETARY

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit herewith my report covering the period from July 1, 1919, to June 30, 1920:

Number of candidates on file for positions	1,830
Number of calls	2,847
Sets of recommendations sent out	5,635
Letters sent out	14,516
Long distance telephone calls and telegrams	1,150
Number of visitors	8,548

The above figures show that the demand for teachers has exceeded the supply by almost one thousand, so that in many cases we have been unable to supply the needs of our high schools. That the number of calls have diminished somewhat must also be taken into consideration, since in many cases we have referred employers to our new Bureau of Occupations.

Respectfully submitted,

MAY L. CHENEY,

Appointment Secretary

PENELOPE McENTYRE,

Acting Appointment Secretary.

CALIFORNIA SCHOOL OF FINE ARTS

SAN FRANCISCO, July 1, 1920.

To the President of the University.

SIR: I have the honor to present the following report of the California School of Fine Arts, San Francisco Institute of Art, for the academic year 1919-1920.

The year has been the most successful in the history of the school both in point of attendance and quality of work accomplished. More than 600 students enrolled in the two terms of the winter session just closed. Over fifty per cent of these were men. The natural reaction from the period of war manifest in this increased interest in so peaceful a pursuit as the study of the fine arts is highly gratifying.

During the three weeks of the final public exhibition of students' work of the last year, May 15 to June 5, the opinion was universally expressed that marked improvement was evident in the work displayed.

Of the ten annual scholarships offered this year by the Art Students League of New York in national competition, six were won by students of this school.

Increased interest was particularly shown in the department of sculpture. There is growing demand for efficient workers in this field.

A most successful and instructive course of twenty-four lectures on Art Appreciation and the History of Art from the early Renaissance to the present day, and profusely illustrated by a remarkable and unique collection of lantern slides, was given by Professor Arthur B. Clark of Stanford University.

An Egyptian festival was held at the close of the first term in December. An elaborate scheme of decoration in Egyptian design was carried out by the students.

The usual prizes and scholarships were awarded by the San Francisco Art Association at the close of the regular session, May 14, including three scholarships offered in annual competition open to all high school students of the state of California.

Respectfully submitted,

LEE F. RANDOLPH, Director.

COLLEGE OF DENTISTRY

SAN FRANCISCO, July 1, 1920.

To the President of the University.

SIR: I beg to submit the annual report for the College of Dentistry for the year 1919-1920.

At the beginning of the year the release of some of our teachers, absent on war-leave, gave apparent assurance that our courses of instruction might be carried on with much greater facility and satisfaction than during the war period. This assurance was, however, short-lived, for the largest enrollment in the history of the school taxed to the utmost the facilities of the department and the ability of the teaching force. One hundred and fifty-three applications were received, and 133 students registered in the first year class. The return of students from military service and transfers from other institutions increased the enrollment in the upper division. A total of 247 students, including six women in the course for Dental Hygienists, was registered this session.

Faculty changes for the year include the return of two full-time teachers, John A. Marshall, D.D.S., Ph.D., as Assistant Professor of Dental Pathology and Biochemistry, and Clark R. Giles, D.D.S., as Superintendent of the Infirmary, and the appointment of H. H. Alvarez, D.D.S., as Instructor in Extracting. The resignations of H. C. Kausen, D.D.S., and H. I. Spare, D.D.S., Clinical Instructors in Operative Dentistry, were accepted. In the death of E. L. McGlashan, D.D.S., Instructor in Orthodontic Technique, the department suffered a loss.

At this date the number of applications indicates a larger enrollment than last year. Of necessity this must be limited, first because of a lack of room to house the students, and second because of a lack of teachers, due to the more favorable opportunities existing in private practice. Unless these conditions are remedied, the College of Dentistry must remain dormant.

If the College of Dentistry is to continue to serve the people of this state and the adjacent territory, enlarged facilities must be provided. A building to cost approximately \$1,000,000.00 will serve for several decades. A site for such a building, unexcelled in the country, is available near the present group of buildings.

It is not likely that the cost of dental education, per student, will ever approach the amount now expended for medical education. In fact the

cost per student, to the state, in dentistry is far less than in any other department of the University, yet dental service is not only a great necessity, it is a commodity required by virtually one hundred per cent of the people.

In addition to numerous gifts of books, journals, and specimens, the department has been the recipient of the following sums for research in dentistry:

From the Associated Radiograph Laboratories, a corporation owned and controlled by the dental profession, whose directors and stockholders wish to divert the surplus income of the corporation into channels which will benefit humanity, after the plan of Dr. F. G. Cottrell in the Scientific Research Corporation, and Dr. T. Brailsford Robertson in the agreement with the Regents of the University relating to the manufacture and sale of Tethelin, the sum of one hundred dollars a month during the calendar year 1920.

From the California State Dental Association, \$465.00.

From the San Francisco District Dental Society, \$250.00.

These appropriations have made it possible to pursue research under the direction of Dr. John A. Marshall.

As a consequence of the many difficulties and obstacles in connection with the war work, practically nothing was done in the field of research until the commencement of the academic year 1919-1920.

The research problems which are being studied in the department this year deal, in general, with some of the factors concerned in dental focal infection. In conjunction with the Hooper Foundation for Medical Research, there has been developed an antiseptic which gives promise of supplanting rather than supplementing some of the so-called antiseptic chemicals and drugs used at present. This antiseptic, a mixture of crystal violet and brilliant green, produces a condition of bacteriostasis upon some of the commoner organisms found in the oral cavity, and it has been possible to obtain, under certain conditions of infection, very rapid sterilization of the tissues involved.

In addition to this there is being projected certain work which deals with the permanent sterilization of infected teeth, and a correlation between the radiographic and bacteriological evidence is being sought which will demonstrate the relative efficiency of the various substances employed. Additional information has been obtained from the microscopic study of the organic matrix of the dentine as compared with that of cementum. It has been found that the direction of the fibers of the two structural elements is closely associated with the action and the penetration of dye stuffs, and of a colloidal solution of silver.

In the study of certain oral lesions it has been stated that either a restricted or an unbalanced diet has been observed to exert deleterious effects upon the structures of the mouth by altering the amount and

composition of saliva. Work upon this problem is again receiving attention, and the relationship of salivary secretion to some of these pathological conditions is being considered.

Experiments in the field of metallurgy under the direction of Dr. Guy S. Millberry, Professor of Dental Chemistry and Metallurgy and Dean of the College of Dentistry, are being made with the object of finding a substitute for gold in dental restorations. It has been estimated that thirty million dollars' worth of gold is used annually in dental work. Of this thirty millions approximately five millions are lost each year. That a substitute for this material in dentistry is possible is only now becoming apparent, and this substitution, if successful, would have an influence upon the conservation of national wealth, and induce important economic changes. There are two possible substitutions for this material; either the development of a new alloy, or the use of plastic materials other than those now known.

In addition, Dr. F. V. Simonton, Assistant Professor of Operative Dentistry, and his assistants have been pursuing investigations in dental histology and histopathology, and the casting of gold inlays, the results of which will be published later.

The gross income for the year amounts to \$70,634.70, or more than \$20,000.00 in excess of the estimated gross income for this period. This, in addition to appropriation made from the general funds of the University, has enabled the department to carry on its instruction satisfactorily.

The separation of teaching maintenance from infirmary maintenance so that the latter may be self-sustaining indefinitely, after a plan suggested by Mr. Ralph P. Merritt conforming in general to the policy of the University Hospital administration, is now under consideration.

A decision regarding the adoption of the five-year course to begin in August, 1921, has not been reached by the University authorities. It is hoped that some action will be taken in the fall of 1920.

Respectfully submitted,

GUY S. MILLBERRY, Dean.

EXAMINER OF SCHOOLS

BERKELEY, July 1, 1920.

To the President of the University.

SIR: As Examiner of Schools I have the honor to submit herewith my report for the year 1919-20.

Following the procedure of recent years, the operations of the department during the past year may be grouped under the following general headings: First, personal field work with the schools; second, general supervision of the official work of the University visitors; third, as Chairman of the Committee on Schools, general responsibility for the policy and activities of this committee; fourth, correspondence and conferences with teachers and school officials; fifth, statistical study of the scholarship records made in the University by freshmen.

First—The personal visiting by the examiner occupied, as usual, the second half of the college year—January to June. As a rule, schools closed earlier this year than in 1919, when commencement was delayed by reason of epidemic conditions. This year, as in the two former years, the visiting has been rather less satisfactory than in the past. This fact has been due in the main to the great number of interruptions in the regular school sessions—unexpected and unannounced vacations, with no little resultant disorganization of class work—and the general unsettlement due to the abnormal conditions prevailing everywhere during the past several years. There are evidences, however, that the schools are slowly returning to normal conditions of work; though it is probable that the present general unrest—felt alike by teachers and pupils—will for a long while make real teaching a more difficult problem and satisfactory scholarship standards more difficult of attainment. These conditions are rendered more acute by the present abnormal economic situation, wherein the uneducated and the unskilled have, in many cases, an actual earning power greater than those who have had many years of schooling. The conditions herein referred to are met in every part of the state. Educational laws recently enacted, requiring larger school attendance, will for a time make these matters worse. New types of studies must be found for both the unwilling and the incapable. Standards of high school class work—especially in the older academic subjects—are still falling and will probably continue to fall until normal economic and industrial conditions are restored.

In spite of this rather dark picture, the schools, allowing for present limitations, are making real progress. There is much evidence that teaching forces and administrative boards are trying hard to make the schools of real and vital service to their communities and the state. The examiner has found the above especially true in rural and semirural communities. This year the examiner has taken unusual pains to meet, when practicable, high school boards of education and discuss with them the needs of their several schools, frequently making very definite recommendations for improvement.

Second—The usual visitation of secondary schools and junior colleges through the University visitors was undertaken this year. However, owing to shortage of available funds, it has not been possible to do this work satisfactorily. Thus the visiting of junior colleges was greatly curtailed; and of the secondary schools requesting inspection for accrediting we were able to visit but two-thirds of the whole number. For three years now something like the above conditions have prevailed. There are three reasons, at least, for this situation: First, some years ago the University put upon the Schools Committee the duty of visiting the junior colleges, but it did not then nor has it ever since set aside any special funds for this purpose. The committee has had to do the best it could with the funds assigned for regular secondary school visiting. Second, the necessary cost of school visiting, as of everything else, has abnormally increased in the past four or five years. Third, the number of secondary schools has grown greatly in the same time, and the junior colleges have also increased in numbers.

As a result of the conditions herewith set forth, the examiner begs to make the following recommendations: First, that a separate item in the budget be allowed for junior college visiting. This visiting should be kept under the general supervision of the Committee on Schools, for this conduces to greater administrative ease and economy in the visiting of both junior colleges and secondary schools. Second, a more liberal budget allowance should be made for the visiting and inspection of secondary schools. The work is of very real value, no less to the University than to the schools. Third, that the present charge of \$10 per school for visiting private secondary schools be made a matter of permanent policy. The writer has never known this charge to be objected to, and the levying of it has certain advantages besides those of a pecuniary nature.

Sixteen University visitors each spent from one to four weeks in the field. The men were carefully chosen; most of them were experienced, and the examiner feels that the work covered this year was unusually well done.

Third—The Committee on Schools has had—apart from the work of school visiting—a quiet year. In view of the new and unstabilized conditions in the schools and in the University, it has seemed best to

allow the schools full opportunity for free working out of their problems, assisted by advice, but unhampered by restrictions on the part of the committee. The duties of the committee will increase with a gradual return to normal conditions.

Fourth—The correspondence of the examiner has been unusually heavy this year and, because of his necessary prolonged absences from the office, it has not been possible to have it done as promptly as would be desirable.

Fifth—The statistical study of the scholarship records of the freshmen, which has been for more than a dozen years a characteristic feature of the examiner's work, was interrupted during the war. No data were published or compiled currently after the data for the class entering 1915 had been worked over and the results published. Owing to the unusual conditions which affected unfavorably both the University and the schools, it was thought not advisable to hold either students or schools strictly accountable for records made. However, beginning with the class entering in August, 1919, this study has been resumed. We now have the index figures calculated for all the years between those named above, except 1918-19, for which no data are available.

Already two uses have been served by these calculations. The Schools Committee has made extensive use of the scholarship records of the present year's class, both for selecting the schools to be visited—since all could not be seen—and for improving the standards of work and University recommendation. These statistical results may serve to allay certain fears, or apprehensions, that have been felt concerning the working of the new admission plan of the University.

Briefly, these results show the following points: Of the class entering in 1915—last published data—the index figure was 2.40, which was a drop of 7 points below the index of the year before. The examiner believed the drop due to the effects of the Panama-Pacific Exposition. Then war conditions intervened, and the index of the two following years, 1916 and 1917, was 2.37 and 2.39, respectively. For 1918 no index was computed. The index for 1919 is 2.45, which is a falling off of but 6 points from the average of the three former years. This is a little less than the drop from 1914 to 1915. Part of this falling off in scholarship is doubtless to be attributed to misunderstanding of the intent of the new admission conditions. Numerous cases of such lack of understanding have come to the Schools Committee through its visitors.

It is the confident belief of the examiner, in which the Committee on Schools concurs, that with administrative support it will not be difficult for the committee to raise the freshman scholarship record promptly and adequately.

Respectfully submitted,

W. S. THOMAS,
Examiner of Schools.

UNIVERSITY EXAMINER

BERKELEY, July 1, 1920.

To the President of the University.

SIR: The work of the University Examiner for the past year may be listed under three heads:

1. Relations with Junior Colleges.
2. Evaluation of Credentials.
3. Other Activities.

First—The junior colleges are increasing in number, in enrollment, and in efficiency, but they are confronted with several problems determined by their environment and the conditions under which their work is done.

(a) AFFILIATION OF JUNIOR COLLEGES

Although the junior college of the future may become an integral part of the secondary school system rather than the first two years of a college course, at the present time its work is more closely defined by the latter relation than by the former. On that account the type of affiliation with the university which may be feasible is a matter of live interest to every junior college.

The academic courses of the junior colleges are planned to cover the work of the freshman and sophomore years of the University. They are usually sufficiently numerous and of such character as to meet the junior certificate requirements of the college of letters and science. In fact, in many cases these requirements form the guide used in establishing junior college courses and curricula. In the nature of things, the number of courses that may be offered is limited so that it is, in general, impossible for a public junior college to offer courses designed to cover the work of the first two years in engineering, commerce, and agriculture, although some one of these is usually given. Likewise the premedical sciences are frequently offered only in part, except in the largest of these institutions. This limitation of curricula is the first factor determining the type of affiliation possible.

The second factor is that of teaching force. The great increase in college and high school enrollments following the war and the fact that many persons are leaving the teaching profession make it impossible to

secure adequately trained college teachers in sufficient numbers. This has resulted in an unfortunate shifting from place to place of those who are nominally or in fact qualified to carry on such instruction. The situation is made more serious at this time by the establishment of new junior colleges in several high school districts, where the boards of education desire to secure recognition by seeking the best teachers available.

The third factor is that of equipment, especially library and laboratory. Much work has been necessary to transplant the idea of the library and its use in work of college grade to the junior college. Results are being obtained in greater or less degree, depending on the character of the teacher employed and the willingness of the school authorities to make the expenditures necessary. The same is true of laboratories.

The factors above outlined lead the Credentials Committee to publish the Junior College Bulletin in 1918, containing "minimum requirements or affiliation" as follows:

MINIMUM REQUIREMENTS:

A. Admission.

The requirements for admission should be the same as those of the University of California (see the Circular of Information, Academic Departments, August, 1917, pp. 98-101). The following statements are especially to be noted: "A graduate of the school (an accredited school), upon the personal recommendation of the principal, accompanied by his certificate that the graduate has satisfactorily completed the studies of the course preparatory to the college he wishes to enter, may, at the discretion of the faculty of such college, be admitted without examination." (1) Recommendations are to be issued only for graduates of the regular courses of the school; (2) recommendations are to be based exclusively upon the regular work of the school and not upon private "coaching" or special examination; (3) "supplementary" recommendations—for work taken in the high school after the pupil's matriculation in a college or university—are not to be accepted in lieu of matriculation examinations.

B. Curriculum.

The curriculum should include, during each year, at least one course of collegiate grade in each of the groups of subjects required for the Junior Certificate, viz., English, history, mathematics, foreign languages, and sciences.

C. Equipment.

1. Laboratory. In addition to the equipment necessary for the operation of the laboratory in a high school science, the junior college should provide the necessary equipment (as indicated in Junior College Bulletin) for the college course or courses in each science that it plans to give. This will normally cost, for each laboratory, from \$1500 to \$3000.
2. Library. Additions to the library, with proper reference books, will be indispensable in English and history. A certain number of books for reference purposes will also be needed in each of the other subjects. Lists of desirable books will be supplied by the University upon request.

D. Faculty.

1. A junior college should be prepared upon starting its work to organize a regular staff of at least five instructors chosen with special reference to their ability to give collegiate work. Of these five it will seldom be possible to choose more than three from the high school staff. Normally each instructor will confine his work in the junior college to one subject, and will devote his remaining time to high school teaching, preferably in the same subject or in an allied subject.
2. Instructors should be chosen with special reference to their ability to teach, their personality, and their preparation in the subject to be taught. For junior college work the Master's degree in the subject in which instruction is to be given will be thought of as the normal minimum scholastic requirement.
3. Instructors should not be allowed to carry more than fifteen one-hour periods, or twenty 45-minute periods of instruction per week. If administrative work is handled, the amount of instruction should be less.

E. Salaries.

In California junior colleges that have been reasonably successful have paid salaries ranging from \$1400 to \$2400 per year. Several institutions have standardized their salaries at \$1800 to \$1900 per year. If proper instruction is to be secured, adequate salaries will be absolutely necessary.

The "affiliated" junior college would receive credit, at their unit value, for the academic courses it gives, this credit to apply toward appropriate degrees. The records of students transferring on this basis for the past few years have fully justified the procedure. Of course this does not imply that the courses offered in a given junior college will afford opportunity for students to secure two years' credit in any curriculum of the University. The requirements for advanced work in all departments of the University have been published as a chapter of the Junior College Bulletin, and a perusal of them indicates definitely that no institution with a small staff and a small enrollment can attempt to prepare its students for advanced work in more than a modest number of the departments. The examiner is now compiling minimum lists of courses to meet the requirements for advanced study in different groups of departments. Within the limitations set by these considerations affiliation of well supported junior colleges appears entirely feasible and desirable.

(b) VOCATIONAL AND ACADEMIC CURRICULA

Some junior colleges have succeeded in establishing vocational courses not designed to give college credit. Up to the present time these have been in the fields of home economics, agriculture, and commercial practice, and have been designed as finishing courses. Many observers believe that the junior college, as the capstone of the secondary school system, will eventually devote most of its energy to this type of work and will

thereby divert from the University many students who are probably better served by vocational curricula than by the more theoretical courses of the University. Because of the fact that little time is devoted to basic or prerequisite courses in these special curricula there is little opportunity for articulation with the corresponding professional university curricula.

(c) VISITING OF JUNIOR COLLEGES

When the junior colleges were first visited systematically by members of University departments they were new, unorganized institutions and, in many cases, were uninformed concerning modern college methods of instruction and of organization. The conditions brought out by these visits were, first, the need of good teachers, well informed and productive scholars in their fields of study, and, secondly, satisfactory teaching conditions, both as to equipment and amount of teaching required. The original plan contemplated a visitor for each department of every junior college once a year. The information secured during the past few years points now to the desirability of laying special emphasis on visits to newly organized institutions and to departments of junior colleges receiving adverse reports. This is the plan under consideration for the coming year.

(d) LIMITATIONS ON ESTABLISHMENT OF JUNIOR COLLEGES

It seems unfortunate that a junior college may now be organized by resolution of a board of trustees without ratification by an election in the district affected and without restriction as to necessary financial support or number of students in attendance. Two conclusions are almost self-evident: a junior college cannot exist without students, nor succeed without proper financial support. It is to be hoped that the junior college of the future will be properly safeguarded by legislation requiring the high school or schools from which the students are drawn to have a minimum average daily attendance of about four hundred, and the district or districts a minimum assessed valuation of about ten million dollars. Junior colleges founded under less favorable conditions have been rarely successful.

Second—Post-war conditions both in the University of California and in educational institutions in general have emphasized the need for a critical review of the methods of rating credentials in use for some years past. Particular study has therefore been given to those from (a) normal schools, (b) high schools outside of California, (c) certain institutions of foreign countries, (d) miscellaneous institutions.

(a) NORMAL SCHOOLS

Officials of normal schools in California have called particular attention during the last year to the absence of articulated curricula for elementary school teachers or principals desiring more than the two-year normal school course. The belief is freely expressed that a four-year curriculum, of which the two-year normal course may constitute the first half, should exist. The problem is now before the faculties, and study thereof has exhibited two facts: first, the normal school curriculum has a relatively small proportion of academic or collegiate courses, and, secondly, the teachers of the normal schools are poorly paid, and, judging by the degrees they hold, considerably less well trained than their university colleagues. It does not seem unreasonable to hope that, should it appear proper and desirable to organize the four-year curriculum as proposed, the course might include modifications of existing normal school curricula in the direction of the junior certificate requirements of the college of letters and science of the University. The normal schools are themselves alive to the need of higher professional standards for appointment to their faculties.

(b) HIGH SCHOOLS OUTSIDE OF CALIFORNIA

Graduates of high schools outside of California have been admitted to the University for several years past on the same conditions as the graduates of accredited high schools. In its administration of these candidates the credentials committee has been confronted with several difficulties. First, the admission to many state universities is based only upon graduation from an accredited high school, without obligation of superior scholarship as a basis for recommendation. This makes it necessary every year to decline to admit students who would be admitted to their own state institutions, and who are recommended by their principal without a full understanding of the minimum scholastic basis of such recommendation. It is often distressing to find that these applicants have traveled long distances to enter the University without having inquired concerning the sufficiency of their credentials. Secondly, the committee has had to rely, in the main, for its information regarding the standing of secondary schools on the lists of accredited schools published in the different states by local authorities. The standards used in the compilation of these have varied widely from those in states with old and well established schools to those in states having new or poorly developed institutions. The committee has therefore, with the aid and advice of the Recorder, inaugurated a system of records which should furnish the basis for a future list of its own. The basis taken for the compilation of this list is the efficiency of the school as a recommendation

agency, i.e., the percentage of its graduates admitted who make satisfactory college records. Already it has been possible to apply this basis to schools making a poor showing, by requiring higher scholarship records than usual, or entrance examinations in four or five subjects, of graduates desiring admission to the freshman class. Obviously the system is of small value where one or two students only come from a school, because the law of averages cannot fairly be assumed to apply to their records.

In the case of students with doubtful or poor records, the committee has continued its policy of former years of requiring examinations in three, four, or five representative high school subjects. It is interesting to note in this particular that relatively few high school graduates with poor records are able to pass examinations in such a group of subjects. The examiner believes that the ultimate extension of this plan of examinations in a small number of subjects to all non-recommended high school graduates would prove entirely satisfactory both to the University and to the schools. This could be done whether entrance examinations were required of recommended graduates or not.

(c) FOREIGN INSTITUTIONS

In consequence of unsettled war conditions there have been fewer foreign students from Russia, Roumania, and contiguous countries than in the past. A number of students have come to us from India; more than usual from France; the largest groups from Central and South America that we have yet known; and about the usual number from Japan and China.

Mr. Kuno's aid has been invoked, as in the past, in the appraisal of Chinese and Japanese credentials. He has rendered valuable service and has materially aided in maintaining the standards of the University with reference to degrees given to students from the countries where he is acquainted with educational conditions. For the first time the committee has compiled fairly accurate information on institutions in India, so that it is now prepared to appraise these credentials with more certainty than in the past.

(d) MISCELLANEOUS

A problem which is a constant source of difficulty to the committee is the appraisal of credentials in the case of applicants who have taken a certain portion of the training required for some profession and who then desire to secure the degree given in another course. The same problem is encountered with graduates of the normal school who desire to obtain the Bachelor's degree, and with students of schools designed to give vocational courses who later decide to pursue the university type

of professional course. In most of these cases a student is in the unfortunate situation of having pursued courses covering from one-third to one-half of the material given in the corresponding university course. This makes necessary the repetition, in large measure and with consequent loss of time, of many courses. A comprehensive solution of this problem does not appear imminent, but it is believed that the University can aid in the articulation of certain courses by offering advice to institutions who desire to have their students transfer to the University later on. Just what advice should be given to junior colleges which desire to give freshman and sophomore instruction in engineering curricula or in pre-medical courses is difficult to state. The problem demands careful study.

Third—During the last year the examiner has served as Chairman of the Committee on Special Students. Pursuant to action of the committee applicants for special status were required to take an intelligence test, in addition to whatever other examinations had been assigned. The results of these tests are being compared with the records of the students with a view to determining the correlation which may exist. In view of the widespread interest and discussions concerning intelligence tests, it would seem highly desirable to have all members of the freshman class this fall take such a test, in order that they may be compared as to performance with students in the freshman class of other institutions. Probably the best study so far made of a freshman class has been that at Yale. It is based on the "Army Alpha," a test which has probably become standardized through much use. It is interesting to know, in this particular, that the High School Principals' Convention at Asilomar voted this spring to ratify the use of the intelligence test by high school principals as one of the means to determine whether or not a given student should be recommended to the university. Should these tests develop, as is now hoped, they will furnish valuable information concerning fitness and unfitness of applicants for given fields of study.

During the coming year it is hoped that further progress can be made in the solution of some of the problems outlined above.

Respectfully submitted,

B. M. Woods,
University Examiner.

UNIVERSITY EXTENSION DIVISION

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor of presenting herewith the seventh annual report of the Extension Division, covering the academic year 1919-1920.

People are more and more supplying their educational wants through extension lectures, extension classes, correspondence study and visual instruction.* In this way, to cite a few examples from the work carried on by the University of California, a chamber of commerce becomes better informed concerning the latest developments of business economy; a group of exporters, concerning foreign exchange; a class of railway men, concerning the principles of transportation and traffic management; a county medical association, concerning certain recent results of scientific research; a civic club, concerning public health. In this way, too, a foreigner may learn English; a woman may study literature or learn how to make her own hats and dresses; a young man or young woman without financial means to take an entire college course may satisfy a portion of the degree requirements while living at home and even while engaged in some lucrative occupation.

It is estimated that 300,000 persons in the United States are annually enrolled in extramural courses offered, on the one hand, by privately owned correspondence schools, on the other hand by endowed or state-supported educational institutions.

Correspondence courses are at present offered by seventy-five educational institutions located in thirty-nine states of the Union. Among these institutions, sixty-three are supported by public funds and twelve by private endowment, the total annual enrollment being about 100,000.

Extension classes, according to latest reports, are being conducted by forty-eight educational institutions, including universities, colleges, and normal schools. The enrollment is about 92,000.

* The 1919-1920 records of the Extension Division of the University of California show the following amount of service:

Department of Class Instruction	12,793	enrollments
Department of Correspondence Instruction	3,522	enrollments
Department of Lectures	107,539	auditors
Department of Visual Instruction	308,613	spectators
Total	432,467	

The amount of correspondence and class extension work carried on during the year 1918-1919 by universities of the United States is shown in the following table:

Name of university	Extension work by corres- pondence	Extension work by class instruction
California.....	2,050	4,980
Chicago (University).....	5,000	.....
College of the City of New York.....	.....	4,950
Colorado.....	.....	300
Columbia.....	.....	5,000
Indiana.....	407	934
Iowa.....	.....	300
Kansas.....	1,187	258
Michigan.....	.....	410
Minnesota.....	330	2,275
Missouri.....	394	27
New York University.....	.....	2,994
North Carolina.....	.....	30
Oklahoma.....	879	.....
Oregon.....	543	907
Pennsylvania (University).....	.....	806
Pittsburgh.....	.....	1,500
South Dakota.....	90	85
Texas.....	1,675	.....
Utah.....	348	1,460
Virginia.....	.....	45
West Virginia.....	.....	418
Wisconsin.....	2,250	.....
Total.....	15,153	27,679
Grand Total.....	.....	42,832

Since credit acquired through extension work is often applied in partial fulfillment of degree requirements, and since these credits are not infrequently transferred from one institution to another, it is important that extension work should be systematized. Its standards should be uniform and should approximate the standards of intramural work. This policy is advocated by the National University Extension Association, an organization representing the extension divisions of American universities. At the last annual meeting, held in April, 1920, at Ann Arbor, Michigan, the subject was extensively discussed. As a result the following motion was passed by unanimous vote:

Resolved, That the members of the National University Extension Association adopt the following recommendations with reference to the standardization of University Extension Credit courses, with the understanding that the term University Extension Credit Courses is to include both courses by direct class instruction and courses by correspondence instruction.

1. *Character and Content of Extension Courses.* The content of an extension credit course shall be practically equivalent to that of a similar course offered in residence. If in any case an extension credit course is not given in residence, such course shall be approved by the head of the department directly concerned and such other authorities as the rules of the institution provide for, and also such course shall appear in the proper

place in the general announcement, having an appropriate title and number.

2. *Conditions of Admission to Extension Courses.* Students shall be admitted to extension credit courses provided they satisfy the proper official that they can pursue the course with profit, and providing they pay the fee.

3. *Time Allotted for Extension Class Work.* In the case of direct class instruction, extension credit courses shall involve practically the same number of hours of class instruction as are devoted to similar classes in residence, and in the case of correspondence instruction the extension course shall be the equivalent in scope to that of the corresponding course offered on the campus.

4. *Examinations.* No student should be given credit in any extension credit course unless he satisfies the instructor of his mastery of the course by means of a thorough examination or other suitable test.

5. *Extension Instructors.* All instructors of extension credit courses shall be members of the regular University faculty or shall be appointed as non-resident members of the faculty, their names to appear in the regular faculty list.

6. *Credits.* Students who pursue an extension course, and who meet all the requirements laid down with reference to attendance, class work, and examinations, shall be given the same credit as that given for a similar course conducted in residence.

7. *Records.* In recording extension credit courses note shall be made that such credits were earned through extension work, either by correspondence instruction or by direct class instruction.

The practice of the University of California Extension Division conforms in nearly every particular with the foregoing description of approved procedure. Regarding paragraph 1, Extension credit courses are not included in the general announcement of courses. They are, however, like Summer Session courses, published with appropriate title and number in a regular University bulletin, to which reference is made in the general announcement of courses. Extension credit courses must be approved by the University Extension Administrative Board, the department or departments of the University concerned, the University Committee on Courses, and the President. Regarding paragraphs 3 and 6, our correspondence students as a rule are required to do somewhat more work and receive somewhat less credit than would be the case if they took the same courses in residence. Regarding paragraph 5, the names of the Extension teaching staff are published not in the general announcement, but in the Extension bulletins referred to above.

WIDENING THE FIELD OF EXTENSION SERVICE

It is desirable that the Extension Division should help every community in the state, the service being spread as evenly as possible. The fact is, however, that the several departments of the Extension Division are not equally adapted to meet the problem. The Department of Correspondence Instruction, the Department of Visual Instruction, and the Department of General Information, by the nature of their work and their

organization, distribute their service evenly in every part of the state. The Department of Lectures operates over a wide area, but in the nature of the case can not bring its service to bear upon all communities in the same way. The Department of Class Instruction works intensively in a limited number of cities. In view of these facts, it seems desirable that departments which operate everywhere in the state should be given facilities to render maximum service.

SUMMARY OF THE EXTENSION DIVISION STAFF

Administrative Officers	11
Assistants to Administrative Officers	25
Extension Teachers	132
Extension Readers	41
Other Assistants in Instruction	12
Lecturers	100
Total	321

NEEDS

1. Standardization of credit in Extension courses.
2. Preparation of additional correspondence courses representing genuine University standards.
3. Facilities for holding Extension classes in an increased number of cities and towns in California.
4. Suitable housing for Extension classes in Los Angeles.
5. Improved equipment for the Department of Visual Instruction.

COMPARISON OF RECEIPTS AND EXPENDITURES, 1918-1919 TO 1919-1920 (June, estimated)

	Receipts		Expenditures	
	1918-1919	1919-1920	1918-1919	1919-1920
Class (North).....	31,299	36,000	39,571	41,000
Correspondence.....	11,829	14,600	12,203	15,000
Lecture (North).....	5,872	7,200	14,303	10,000
Visual.....	2,074	1,200	5,739	2,900
Music.....	.....	6,000	.....	7,500
Technical.....	.....	6,000	.....	12,000
Class (South).....	15,647	21,500	10,953	18,500
Lecture (South).....	5,686	5,600	5,119	8,000
Americanization.....	.....	7,200	.....	9,000
Berkeley Office.....	.....	.....	14,679	15,000
Los Angeles Office.....	.....	.....	8,734	9,800
Stockton Office.....	.....	.....	.....	400
San Diego Office.....	.....	.....	.....	700
San Francisco Office.....	.....	.....	948	5,500
	72,230	105,300	112,249	155,300
State Appropriation.....	35,000	50,000		
	107,230	155,300		
Deficit for year.....	5,019	None		
	112,249			

CORRESPONDENCE INSTRUCTION

The Department of Correspondence Instruction during the year has had 3522 enrollments, which is a gain of 687 over the year 1918-1919. This type of Extension service is available in all communities of the state and elsewhere, being excluded only from such places as have no postal connection. This medium of University Extension is therefore well adapted to the work of serving the whole people.

The growth of the work by years is shown as follows:

1914-1915	1915-1916	1916-1917	1917-1918	1918-1919	1919-1920
1871	2217	2450	2456	2835	3522

The following list will give a clear idea of the extent of territory covered by our correspondence courses. The figures indicate not the number of enrollments but the number of different persons enrolled during the year.

CALIFORNIA BY COUNTIES

Alameda.....	369	Orange.....	20
Alpine.....	...	Placer.....	15
Amador.....	8	Plumas.....	11
Butte.....	18	Riverside.....	13
Calaveras.....	1	Sacramento.....	60
Colusa.....	1	San Benito.....	2
Contra Costa.....	44	San Bernardino.....	27
Del Norte.....	2	San Diego.....	60
El Dorado.....	1	San Francisco.....	400
Fresno.....	61	San Joaquin.....	38
Glenn.....	14	San Luis Obispo.....	15
Humboldt.....	25	San Mateo.....	26
Imperial.....	15	Santa Barbara.....	24
Inyo.....	8	Santa Clara.....	77
Kern.....	50	Santa Cruz.....	5
Kings.....	13	Shasta.....	6
Lake.....	...	Sierra.....	3
Lassen.....	8	Siskiyou.....	15
Los Angeles.....	262	Solano.....	50
Madera.....	7	Sonoma.....	27
Marin.....	38	Stanislaus.....	23
Mariposa.....	3	Sutter.....	2
Mendocino.....	14	Tehama.....	6
Merced.....	11	Trinity.....	4
Modoc.....	7	Tulare.....	25
Mono.....	4	Tuolumne.....	7
Monterey.....	17	Ventura.....	14
Napa.....	37	Yolo.....	18
Nevada.....	15	Yuba.....	9

CLASS INSTRUCTION (NORTH)

Number of classes	331
Number of enrollments	6510
Number of teachers	75

The work in this field during the year has included courses of a more extensive and advanced character than any previously offered. Examples are Professor G. M. Stratton's course on Psychology and Health, given in Oakland before a group of twenty-two men and women in the medical profession; Mr. W. L. Trammell's course on Transportation and Traffic Management, covering a period of nine months and meeting in two-hour sessions twice a week for men employed in the transportation departments of railroad companies and large exporting houses; Professor C. E. Rugh's course on Teaching Methods and Professor H. E. Bolton's course on the History of the West, given at the Convent of the Holy Names in Oakland. An important group of courses has been carried on at the Convent of the Sacred Heart in Menlo Park.

CLASS INSTRUCTION (SOUTH)

	1918-1919	1919-1920
Number of Classes.....	115	220
Number of Enrollments	3,677	5,463
Number of Teachers.....	38	43
Number of students qualifying for credit	444	
Number of cities in which classes were held	5	

The following table shows the number of students enrolled by subjects:

Americanization.....	411	Logic.....	25
Art.....	20	Mathematics.....	14
Business.....	233	Music.....	12
Commercial Geography.....	24	Penmanship.....	32
Education.....	232	Political Science.....	45
Economics.....	59	Public Health.....	18
English.....	914	Social Service.....	12
French.....	319	Spanish.....	119
Graphic Art.....	17	Technical Subjects.....	25
History.....	101	Zoology.....	30
Household Art.....	19		

LECTURES (NORTH)

During the year 1918-1919, 290 lectures, sixty-one concerts, and seven readings were delivered, making a total of 358. During the year 1919-1920 there were delivered 276 lectures, thirty-two concerts, and seven readings, making a total of 315. This service was performed by forty-six members of the faculty, twenty-three other lecturers, two readers, and twenty-three musicians.

Outstanding features in the year's work are the following: Six lectures by Professor G. M. Stratton on Psychology and Health, delivered in San Francisco; a series of lectures by Dr. R. T. Legge and others before the Fresno County Medical Association on Planning a Health Center; lectures delivered in San Francisco by Professor E. K. Rand,

Mr. Blasco Ibanez, Dr. Frederick Starr, and Miss Madeline Veverka. President David P. Barrows delivered a series of five lectures in Stockton and ten lectures in San Francisco on Contemporary National and International Problems. A series of lectures was delivered before the Chamber of Commerce in San Jose on Citizenship and Social Problems, and similar lectures were delivered in Sacramento, Auburn, and Fresno. The LeConte Memorial Lectures, delivered in the Yosemite Valley, were widely commended. About forty commencement addresses were supplied to high schools. Among the notable concerts of the year was a series given by Mr. Sigmund Beel and Mr. George McManus at the St. Francis Hotel in San Francisco and one given in Berkeley by Mr. W. W. Carruth and Mrs. Mildred Wright.

LECTURES (SOUTH)

During the year 1918-1919, 213 University Extension lectures and concerts were delivered. During the year 1919-1920 the number was 239. These lectures and concerts were delivered by forty different persons in fifty-one cities and towns. Of the lectures, thirty-one were delivered by persons connected with the University of California faculty at Berkeley. The others were delivered by persons connected with the faculty of the Southern Branch and other educational institutions. A notable feature of the year's work was a group of lectures delivered by Dr. Richard Burton.

VISUAL INSTRUCTION

The Department of Visual Instruction more than doubled itself during the fiscal year 1919-1920, not only in the number of people reached but also in equipment. Among the people reached by this department, 40 per cent were adults. More and more the department is serving churches, clubs, chambers of commerce, and other adult organizations. Formerly its activity was limited mainly to serving the schools.

TECHNICAL DEPARTMENT

The Technical Department embraces instruction in subjects more or less closely connected with engineering. Its work is done through Extension lectures, Extension classes, and correspondence study. The courses offered are classified as Secondary, Collegiate, Professional, and Vocational. A special effort has been made during the year to prepare additional correspondence courses representative of the best University standards. These new courses concern the following subjects: Physics, Plane Surveying, Materials of Engineering Construction, Historical Geology, Determinative Mineralogy, Elementary Technical Mathematics.

EXTENSION INSTITUTE OF MUSIC

The Extension Institute of Music comprises all Extension activities in the field of music carried on by the Department of Correspondence Instruction, the Department of Class Instruction, and the Department of Lectures. Its recent work is commented on in the following excerpt from a letter sent to all state universities in the Union by the National Bureau for the Advancement of Music:

In the course of our work for spreading interest in music, we have been much impressed with what several universities are doing through their Extension Departments to bring music in a broad democratic way to all the people in their territory.

The significant thing is that they recognize how potent a force music is in the welfare of the individual and of the community, and that the time has come for the college to identify itself actively with it as a growing factor in American life.

The Extension Division of the University of California is reaching out even to the remotest towns and villages in the State to raise cultural standards and advance social well-being through the medium of music. The Music Department of this Division has a list of artists and lecturers which it sends out at a nominal fee to any local group or organization requesting this assistance. It encourages civic music associations and helps in their establishment and their preparation of educational programs.

Respectfully submitted,

L. J. RICHARDSON,
Director.

GRADUATE DIVISION

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit my report on the Graduate Division for the academic year 1919-20.

Attendance.—The total registration of graduate students for the last four successive years was 1092, 931, 603, and 1127, including 16, 4, 6, and 17, admitted to study in absence. The fluctuation in these figures is due to the war. Of the 1076, 927, 597, and 1110 resident students, 55, 75, 57, and 145 either failed to file study-cards or withdrew. The remaining 1021, 852, 540, and 965 were distributed as follows:

	1916-17	1917-18	1918-19	1919-20
PROFESSIONAL SCHOOLS AND COLLEGES—				
Agriculture (all subdivisions).....	63	34	12	36
Architecture.....	18	7	4	9
Chemistry (including students in other colleges with major subject chemistry).....	43	32	18	30
Commerce (including students in other colleges with major subject economics).....	65	41	22	53
Education (not including students in the School of Education with a first major in other subjects).....	93	93	68	183
Engineering.....	13	5	13	18
Jurisprudence.....	88	47	53	107
Medicine (students who take the first or second year at Berkeley in graduate standing).....	37	53	18	39
Naval Preparation.....	....	6	1	0
Total.....	420	318	209	475
Percentage.....	41.1	37.3	38.7	49.2
MODERN AND ANCIENT LANGUAGES AND LITERATURES—				
English.....	101	95	48	70
German.....	46	34	15	16
Greek.....	3	3	1	1
Latin.....	30	25	16	20
Oriental Languages.....	2	3	1	4
Romanic Languages.....	45	58	31	51
Semitic Languages.....	1	1	1	0
Slavic Languages.....	4	3	2	5
Celtic.....	....	....	1	0
Total.....	232	222	116	167
Percentage.....	22.7	26.0	21.5	17.3

NATURAL AND ALLIED SCIENCES—	1916-17	1917-18	1918-19	1919-20
Anatomy.....	4	3	1	7
Anthropology.....	5	6	2	3
Astronomy.....	7	3	3	5
Biochemistry.....	7	3	2	4
Botany.....	18	20	10	9
Geography.....	4	1	3	3
Geology.....	10	8	4	7
Hygiene.....	6	7	2	3
Mathematics.....	40	29	15	24
Mineralogy.....	2	1	0	0
Palaeontology.....	3	3	0	4
Pathology and Bacteriology.....	3	10	8	3
Physics.....	24	11	4	11
Physiology.....	8	7	5	11
Public Health.....	7	6	2	2
Zoology.....	21	29	20	21
Total.....	169	147	81	117
Percentage.....	16.6	17.3	15.0	12.1

OTHER SUBJECTS—	1916-17	1917-18	1918-19	1919-20
Household Art and Science.....	30	25	20	13
Drawing and Art.....	13	13	11	8
History.....	81	76	55	102
Music.....	3	3	2	6
Philosophy.....	31	26	12	21
Psychology.....	6	4	9	14
Physical Education.....	9	6	12	14
Political Science.....	16	10	8	17
Public Speaking.....	11	2	3	5
Library Science.....	....	....	2	6
Total.....	200	165	134	206
Percentage.....	19.6	19.4	24.8	21.4

The percentage of women which had steadily increased to 60.2 in 1918-19 has receded to 48.8, as shown by the following figures:

	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Percentage.....	44.8	47.1	51.3	58.1	60.2	48.8

In addition to the registered students, a number of accepted candidates for higher degrees continued their studies under the direction of the University during temporary absence.

Institutions Represented.—The classification of graduate students according to the institutions from which they had received degrees was as follows:

	1918-19			1919-20		
	No. of institutions	No. of students	Percent-age of students	No. of institutions	No. of students	Percent-age of students
University of California.....	1	343	63.3	1	579	60.0
Other California institutions..	7	42	7.8	9	81	8.4
Other institutions west of the Rocky Mountains.....	13	35	6.5	14	51	5.3
Middle Western institutions..	30	61	11.3	58	147	15.2
Eastern and Southeastern institutions.....	27	45	8.5	37	76	7.9
Foreign institutions.....	9	14	2.5	27	31	3.2

The total number of institutions represented for five successive years was 207, 175, 128, 87, and 146. The fluctuations in these figures show the effect of the war on the migration of graduate students.

Candidates for Higher Degrees and Degrees Conferred.—The number of accepted candidates for higher degrees, the number of degrees conferred, and the number of recommendations for the high school teacher's certificate issued by the University have been as follows:

Degrees	1917-18		1918-19		1919-20	
	Candidates	Degrees conferred	Candidates	Degrees conferred	Candidates	Degrees conferred
M.S. and M.A.....	259	95	256	71	386	141
Gr. Arch.....	3	0	3	0	3	0
Gr. Educ.....	7	1	9	1	10	0
Gr. P.H.....	1	1	0	0	0	0
J.D.....	15	5	19	10	38	28
C.E.....	0	0	2	0	2	0
Mech. Eng.....	1	1	0	0	0	0
Min. Eng.....	1	1	0	0	1	1
E.E.....	1	0	0	0	0	0
Ph.D.....	84	18	95	21	113	23
Total.....	372	122	384	103	553	193
High School Teachers' Recommendations..	275	241	263	208	261	229
Grand Total.....	647	363	647	311	814	422

The number of candidates who either withdrew or were disqualified has been as follows:

	1915-16	1916-17	1917-18	1918-19	1919-20
M.S. and M.A.....	22	24	25	23	86
J.D.....	1	5	5	4	9
Ph.D.....	3	13	12	7	8
H.S.T.R.....	17	1	12	14	32

Up to the present time the University has conferred a total of 243 degrees of Doctor of Philosophy. Of these 23 were conferred during the past academic year, as compared with 21 during the preceding year. The following table gives a comprehensive view of the past and present activities of departments in regard to graduate and research work leading to this degree:

	Total number Ph.D.'s conferred	Ph.D.'s conferred 1915-16	Ph.D.'s conferred 1916-17	Ph.D.'s conferred 1917-18	Ph.D.'s conferred 1918-19	Candidates Ph.D. 1919-20	Ph.D.'s conferred 1919-20
Agriculture.....	10	3	3	0	1	5	1
Anatomy.....	0	0	0	0	0	2	0
Anthropology.....	2	0	0	0	0	0	0
Archaeology.....	1	0	1	0	0	0	0
Astronomy.....	24	1	3	0	1	8	2
Biochemistry.....	7	1	1	1	2	3	0
Botany.....	13	2	1	1	0	3	0
Chemistry.....	29	5	4	3	3	4	3
Dentistry.....	0	0	0	0	0	1	0
Economics.....	5	1	0	0	0	9	2
Education.....	4	0	1	0	0	8	1
Electrical Engineering.....	0	0	0	0	0	0	0
English.....	5	0	0	0	1	4	0
Geology.....	14	0	2	2	0	5	2
German.....	6	0	0	0	1	4	2
Hebrew.....	1	0	0	0	0	0	0
History.....	24	2	5	2	2	6	3
Hygiene.....	0	0	0	0	0	0	0
Jurisprudence.....	0	0	0	0	0	1	0
Latin.....	4	0	0	0	0	0	0
Linguistics.....	1	0	0	0	0	0	0
Mathematics.....	16	2	1	3	1	3	1
Medicine.....	4	0	0	0	3	4	1
Oriental Languages.....	0	0	0	0	0	1	0
Palaeontology.....	8	1	2	0	0	2	0
Pathology.....	2	0	0	0	1	3	1
Philosophy.....	6	0	2	0	1	1	0
Physics.....	13	1	2	2	1	4	1
Physiology.....	11	0	0	1	0	2	1
Political Science.....	6	0	2	0	0	2	1
Psychology.....	0	0	0	0	0	1	0
Romanic Languages.....	3	2	0	0	1	0	0
Slavic Languages.....	0	0	0	0	0	1	0
Zoology.....	24	1	3	3	2	8	1
Total.....	243	22	33	18	21	95	23

Graduate Work in the Summer Session.—The relation of the Summer Session to the Graduate Division is indicated by the following table:

Year	Master's degrees conferred	Enrolled in Summer Session	Per- centage
1912-13.....	89	15	17
1913-14.....	119	19	16
1914-15.....	119	18	15
1915-16.....	149	27	17
1916-17.....	131	33	25
1917-18.....	95	28	29
1918-19.....	71	20	28
1919-20.....	141	43	30

The figures presented in this report indicate that the Graduate Division has entirely recovered from the effects of the war.

Research Record.—The work of the Research Board during the last academic year is set forth in a separate report of the chairman of the board (p. 156).

Faculty Research Lecture.—Professor G. N. Lewis was honored by the Academic Senate with election as Faculty Research Lecturer for the year 1917-18, but was compelled to postpone the delivery of the lecture until after his return from France, where he served during the war as lieutenant-colonel in the Chemical Warfare Service. Professor Lewis chose for his subject "Color and Molecular Structure," and delivered the Faculty Research Lecture on March 22, 1920, during charter week in connection with the inauguration ceremonies of President Barrows.

Hitchcock Lectures.—Two series of Hitchcock Lectures were delivered in 1919-20. The first series was delivered by Professor W. J. V. Osterhout of Harvard University on "Fundamental Life Processes." The dates and subjects of his lectures were as follows:

August 20—"Origin and Nature of Life. Growth and Reproduction."

August 21—"Motion and Irritability."

August 22—"Metabolism."

August 25—"Permeability."

August 27—"Absorption of Water and of Dissolved Substances."

August 29—"Alterations of Permeability. Antagonism."

The second series was delivered by Professor Vito Volterra of the University of Rome. The dates and subjects of his lectures were as follows:

October 13, 14, 16, 17—"Propagation of Electricity in a Magnetic Field."

October 20, 21—"Derivate Functional Equations."

Respectfully submitted,

A. O. LEUSCHNER,

Dean of the Graduate Division.

HASTINGS COLLEGE OF THE LAW

SAN FRANCISCO, July 1, 1920.

To the President of the University.

SIR: I have the honor to present the following report of Hastings College of the Law for the year 1919-1920:

With the return of young men from war service the number of students has increased; but more important than this numerical growth is that an increasing number of applicants have not contented themselves with fulfilling the minimum requirement of two years' university study, but have completed their four years of academic work and obtained their bachelor's degrees before entering the college.

Some changes have been made in the curriculum, the most significant of which perhaps is the additional requirement that students read and pass an examination upon a series of selected books and monographs dealing with the historical development of the law. For the analytical training of the student of the law the study of selected cases is all but universally recognized as the proper basis of instruction in the university law school. This must be supplemented, however, with an acquaintance of the historical development of law.

A course in Admiralty and Shipping Law is to be added to the curriculum for the coming year and will be given by G. W. Bell, Assistant Professor of Law, who has had many years' experience in this special field. The moot court work has been made more intensive and frequent. Lectures have been delivered from time to time by judges and lawyers upon special subjects. The San Francisco Law Library has made extensive purchases of books of scholarly interest. Most important of all, the students have shown, during the course of the year, an increasing zest and enthusiasm for their studies which gives hopeful promise of the future.

The experience of Columbia, Northwestern, and Chicago is a sufficient answer to those who profess to disbelieve in the possibilities of the university law school situated in a large city. So long as the standards of admission and of scholarship are maintained, the possibilities of achievement are almost unlimited, for if the city university law school has its peculiar difficulties and problems it has also its peculiar advantages. Hastings College of the Law in addition has its own tradition of

of endeavor and substantial achievement. In its early years Professor Pomeroy pointed the way to its task of wrestling with the legal problems of a commonwealth where the civil law has had a greater influence than in most common law jurisdictions and where the only comprehensive scheme of American codification, imperfect though it may have been, has been given its most thorough trial. Our work is done in a metropolis, in a building devoted to the administration of justice and with the atmosphere of law and lawyers about us. We have at hand the most complete law library on the Pacific Coast. During the last year there has been no lack of enthusiastic endeavor on the part of those of us who are charged with the task of realizing the inspiration of our opportunities.

Respectfully submitted,

MAURICE E. HARRISON,
Dean.

HOOPER FOUNDATION

SAN FRANCISCO, July 1, 1920.

To the President of the University.

SIR: I have the honor to present the following report of the George Williams Hooper Foundation for Medical Research for the year 1919-20:

During the past year several important activities have developed in connection with the Research Laboratory and its senior staff. At the suggestion of Dr. W. E. Musgrave, Superintendent of the University of California Hospitals, and with the active co-operation and supervision of Dr. A. E. Meyer, Instructor in Pediatrics, a department for the preparation of culture media has been developed in the Research Building. The necessary personnel has been trained and is now working efficiently under the supervision of Miss Schoenholz. This department is able to prepare accurately and expeditiously media of all types suitable for the most advanced work in special problems. Stock media is also made in large amounts to supply the needs of the various hospitals associated with the University of California Medical School. Various research groups obtain their media promptly from this department. It is hoped that a certain number of hospitals and physicians who require special media will be able to avail themselves of the facilities of this department.

A photographic department has been added in a similar fashion, and work done by Miss Litch is of much value to the hospital, to the clinical departments of the Medical School, and to the research department. Accurate records for clinical histories, lectures, or papers to be published can be promptly obtained in this way at a minimum expense.

BOTULISM INVESTIGATION

During the past year many small epidemics of food poisoning have been brought to the attention of the public in the daily papers. A form of food poisoning due to the bacillus botulinus has been found to be caused by a poison produced in improperly preserved material, both vegetable and animal. In this state the canned vegetables have been found more frequently concerned. Home canned material has particularly been a frequent cause of fatal poisoning in man and domesticated animals. The epidemic often times involves the members of several families. Commercially canned material, however, has been shown to be occasionally

contaminated with reported fatal results. Realizing the importance of this subject, the menace to the public health, as well as to the canning industries, it has been decided to make a thorough study of this whole subject so that the necessary precautionary measures can be taken which will insure absolute safety and prevention of future epidemics of botulism poisoning. This plan of investigation has a broad public health interest, but it is being financed at present almost entirely by the National Canners' Association and the California Packing Corporation. These companies have invited the Hooper Foundation and Dr. Dickson of the Stanford Medical School to co-operate in a scientific investigation of this subject. They have supplied funds adequate to carry on this work. The investigative work in progress in the Hooper Foundation is under the direction of Dr. K. F. Meyer, Associate Professor of Tropical Medicine, and the grant made for this phase of the work totals \$15,800. This work is actively in progress and may be described in several subdivisions:

A study of the basic nitrogen metabolism of *B. botulinus* in animal and vegetable media, conducted by Miss Wagner and Miss Cochrane. The carbohydrate metabolism, the analysis of the acids and gases elaborated by *B. botulinus* are being investigated by Miss Brink. The growth curve, acid and alkaline deathpoint, the oxygen tolerance and the production of botulism toxin in animal and vegetable material under different environmental conditions are being studied by Miss Castle. A detailed search of soil, vegetables, manure, etc., for the presence of *B. botulinus* by means of selective media is conducted by Miss Dubovsky, Miss Oman, and Miss Field. Carefully isolated strains of *B. botulinus* are being studied biochemically and serologically by Miss Neilson. The U. S. Public Health Service, realizing the importance of this problem, has actively coöperated with the investigation. They have assigned a very able field worker, Dr. J. C. Geiger, surgeon of the U. S. Public Health Service, who is studying carefully all epidemics of this poisoning both in man and in animals and is collecting the specimens in the field used for the search of the *B. botulinus*. Food poisoning among animals is of considerable economic importance and it is believed to have an important relationship to the distribution of *B. botulinus* in nature. The distribution of the bacillus is of great significance in attempting to safeguard against contamination of human food with the bacillus.

STUDY OF THE ABORTION BACILLUS

This important study has been continued by Dr. Meyer, Dr. E. C. Fleischnner, Assistant Clinical Professor of Pediatrics, Mr. Shaw and Mr. Jecki. It was shown that this bacillus is frequently found in the certified milk of San Francisco. It has been demonstrated that this organism is pathogenic to monkeys, which can be readily infected by inoculations. More important, these same animals can be infected by milk obtained

from goats which have been heavily infected with a recently isolated strain of *B. abortus*. These and other experiments show that there is a very close relation between this bacillus and the bacillus of Malta fever. A careful comparative study of the bacteria of Malta fever which have been obtained from Algiers, England, and Italy has therefore been undertaken. Among the number of interesting facts already established, it has been shown by Miss Feusier that the genus of *B. melitensis* and *B. abortus* can be subdivided into four groups. There is one strain of *B. melitensis* which is serologically indistinguishable from *B. abortus*.

A study of the group of pathogenic anaerobes has been completed by Mrs. F. H. Heller, Fellow in Research Medicine, and a partial report of this study was submitted in part fulfillment of the thesis for her Ph.D. degree. Additional publications on the classification, the isolation of anaerobes, the tetanus group, etc., are in preparation. The study embraces the anaerobes isolated from war gas gangrene and blackleg or similar infections in food producing animals. This work is being continued by Miss McRoberts.

The study of experimentally produced typhoid and paratyphoid infections in animals has been brought nearly to completion by Dr. Meyer, Miss N. M. Neilson, Instructor in Bacteriology and Fellow in Research Medicine, Miss Feusier, Miss Schoenholz, Miss Litch, and Miss Thompson. This work will appear in several publications in the coming year.

The study of renal infections has been continued by Dr. Meyer and Dr. F. Hinman, Instructor in Urology.

LEPROSY AND TUBERCULOSIS

This important investigation has been continued by Dr. E. L. Walker, Associate Professor of Tropical Medicine. He has had the able assistance of Miss M. A. Sweeney and Dr. Pierson. Dr. Walker has also been fortunate in the active coöperation of Dr. J. A. Traum of the Veterinary Division of the University of California. The investigation of the specific action of chaulmoogra oil and its various derivatives on the bacilli of leprosy and of tuberculosis has been continued with very suggestive and stimulating results. The active substance has been isolated and its specific action clearly demonstrated. The pure salt can be used for intravenous injection, thereby facilitating experimental work and treatment. This substance destroys the bacteria of leprosy and tuberculosis in cultures in high dilutions; in fact, it is about one hundred times more efficient in this respect than carbolic acid. The substance is inert against other common bacteria, for example, the typhoid bacillus. Dr. Walker is studying a large series of animals infected with tuberculosis to ascertain whether or not this substance is effective in checking the growth of the tubercle bacillus in the tissues of the infected animals. Because

of the chronic nature of the infection of tuberculosis these experiments are of necessity long continued. The study is not limited to the use of small animals like rabbits, but has been extended to cattle. We wish to express our appreciation of the invaluable coöperation of the Veterinary Division of the University of California in this work. During the coming year it is hoped to extend this study to a carefully selected group of human patients infected with tuberculosis. With the consent of these individuals it will be possible to investigate with great care the reaction to this peculiar drug. This drug can be given in considerable amount to humans infected with leprosy, and by this means leprosy is now regularly and rather promptly cured. Whether or not this drug will have as favorable an influence on the lesions of tuberculosis in the human being can only be ascertained by the most carefully controlled observations upon experimental animals and patients. Attempts are being made to prepare new compounds of the chaulmoogra acid which may be still more powerful in their effect upon the bacteria concerned. For this work the services of a chemist skilled in this field of research is an absolute necessity. At present funds are not available, but it is hoped that the great importance of this work may be realized by the friends of the University who may be in a position to supply the funds required.

Further work with the leprosy bacillus has uncovered some important facts related to the epidemiology of leprosy. When finally worked out it is hoped that these facts may radically modify the present methods of public health control of the disease of leprosy, which so far has defied the activities of the various boards of health in the communities in which it is prevalent. The U. S. Public Health Service in the Hawaiian Islands is greatly interested in this work, and it is possible that Dr. Walker may find it necessary to visit their laboratories during the coming year.

The physiology of the gastrointestinal tract is being studied by Dr. W. C. Alvarez, Instructor in Research Medicine, who is extending his valuable studies in this subject. Dr. Alvarez is also investigating by means of a statistical study the blood pressures of young and middle aged individuals. It is hoped that his analyses may throw some light on the origin of high blood pressure, which is relatively common in advanced middle age.

STUDIES IN ANEMIA

The capacity of the body to form the red blood pigment has been investigated by Dr. G. H. Whipple, Professor of Research Medicine and Director of the Hooper Foundation for Medical Research, and Mrs. F. S. Robscheit, Fellow in Research Medicine. This problem is a part of the larger problem of pigment metabolism, by which is meant a study of the pigment development or construction as well as its destruction in the body. Very little is known concerning the origin and fate of the various

pigments of the body. These include the red pigments of the blood (the oxygen-carrying substances), the pigments of the bile, and the pigments of the urine and feces. A careful study of the construction of new blood pigment is being continued. It has been shown that this construction of new hemoglobin is dependent upon food factors rather than upon drugs, which are often given to stimulate the production of this important pigment in cases of anemia in human beings. It has been shown that in animals many of these drugs are inert as compared with food factors. It is therefore very probable, if not certain, that the same factors obtain in the anemias of human beings, so that various food factors are of much greater importance in the treatment of simple anemia than are the drug factors. It is of considerable importance to physicians to know accurately what food substances are most efficient in stimulating the production of red blood cells. The accumulation of these data is not a rapid process and requires a great deal of time-consuming labor. It is probable that these observations can be extended to a study of complicated forms of anemia, although so far all observations have been made in simple secondary anemia following the loss of blood by bleeding.

Blood volume studies are an essential part of the foregoing problem, as it is obviously necessary to measure accurately the blood circulating in an individual at a given time, otherwise the formation of new blood cannot be determined satisfactorily. This work has occupied much time and has been carried on by Mr. H. P. Smith, Mr. H. R. Arnold, Miss E. B. Carrier, Mr. F. W. Lee, and Dr. Whipple. The various blood volume methods have been carefully analyzed and controlled and several new ones devised. This work requires the use of many non-toxic dye substances which can be introduced into the blood and afterwards analyzed colorimetrically. The assistance and advice of Dr. H. M. Evans of the Department of Anatomy, University of California, has been invaluable.

Bile acids have been studied by means of bile fistulas in dogs and much information has been gained as to the relation of food intake to the output of these substances. The importance of these substances in the body economy has also been investigated by Mr. F. S. Smyth, Student Fellow in Research Medicine, and Dr. Whipple.

The study of the influence of the X-rays upon the various tissues of the dog has been continued by Mr. S. L. Warren and Dr. Whipple. The specific reaction and sensitivity of intestinal epithelium to the X-ray has been established beyond question. It is very suggestive that after extensive destruction of the epithelium by the X-ray the intestinal bacteria do not gain entrance to the blood stream with any more rapidity than during simple diarrhea. Previous to this observation it has been assumed that the intestinal epithelium forms an essential barrier between the intestinal lumen and the circulation so that if this barrier became injured it was assumed that the bacteria would readily gain entrance to the

portal circulation. These observations show that this assumption is mistaken and indicates that some other substance or tissue is quite capable of acting as a barrier and protecting the circulating blood from invasion by bacteria.

Liver repair following specific injury has been studied by Mr. N. C. Davis (University of California Fellowship) and Dr. Whipple. The influence of various diets upon this remarkable regenerative capacity of the liver has been studied in some detail.

Antivivisection agitation. The various members of the laboratory staff have found it necessary to devote no small part of their free time to combat the unfortunate activities of antivivisection societies and their adherents. These people, with the best of intentions in the world, wish to deny the medical profession the right to use animals to investigate problems which cannot otherwise be studied. They assume that unheard-of cruelties are perpetrated in the various laboratories, and refuse to even visit these laboratories on invitation to ascertain that such is not the case. This laboratory has always been open to the public at any and all times and all parts of the laboratory are open to inspection from friendly or hostile visitors. Officers of the local S. P. C. A. have visited this laboratory on several occasions and have found nothing to criticize. They have made one or two suggestions about the arrangements of cages and ventilation of animal houses, which have been carried out. In spite of all these facts, the antivivisection societies continue to distribute literature which contains many false statements and pernicious interpretations. It is to be urged upon all friends of the University that they disseminate the correct information and assure interested persons that no cruelties are permitted in any of the modern laboratories where animal experimentation is performed: that all operations are done under anesthesia, and that every care is taken to minimize post-operative discomfort, exactly as is done in the modern hospital. It is safe to say without qualification that teaching of modern medicine cannot be done without the use of animals; even accurate diagnosis in medicine is impossible without the use of animals. For example, the Wassermann test for syphilis, which is an every day matter, can only be accomplished by the use of material obtained from animals. Public health work requires constant use of animals: for example, the accurate diagnosis of rabies (hydrophobia) requires the use of animals, and the prompt and specific diagnosis of bubonic plague requires the use of animals. The average person does not stop to think how necessary it is for the medical profession to use animals in the various routine procedures of every day medical practice and teaching. A realization of this necessity for work with animals should be widely disseminated and the friends of the University should be so informed.

Volume IV of the Collected Reprints of the Hooper Foundation appeared during the year. This volume contains twenty-nine papers. This list will show the number and scope of the papers produced by the laboratory during the year.

It has been possible to make a few physical changes in the plant which have increased the laboratory space by one large room. The necessary new equipment has been added. A large storeroom has been constructed in the basement. Additional rooms for small animals and a constant temperature room for monkeys and mice have all been constructed in the basement. In spite of these changes the laboratory work space is crowded.

PERSONNEL

During the present year four new student fellows were appointed: Miss E. B. Carrier, Mr. F. W. Lee, Mr. K. F. Pelkan, and Mr. F. P. Wisner. Volunteer and special workers have again contributed invaluable services which have made possible investigations as noted above. Miss Feusier, Miss McRoberts, Mr. Veeki, and Mr. Shaw deserve special mention. Graduate students, volunteer and special workers are included in the list which follows.

GRADUATE STUDENTS, VOLUNTEER AND SPECIAL WORKERS

Dr. E. C. Fleischner	Miss M. L. Feusier
Dr. Frank Hinman	Miss L. McRoberts
Dr. P. H. Pierson	Miss E. J. Easton
Dr. J. C. Geiger	Miss M. Thompson
Dr. F. B. Taylor	Miss C. E. Castle
Dr. A. E. Belt	Miss E. Wagner
Mr. E. B. Shaw	Miss G. Cochrane
Mr. M. E. Veeki	Miss F. Field
Mr. H. P. Smith	Miss K. Oman
Mr. N. C. Davis	Miss B. Dubovsky
Mr. G. D. Delprat, Jr.	Miss E. Brink
Mr. C. C. Berwick	

It is a privilege to express for the laboratory staff its appreciation of the cordial coöperation on the part of other departments and individuals of the Medical School and Hospitals.

Respectfully submitted,

GEORGE H. WHIPPLE,
Director.

UNIVERSITY INFIRMARY

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit the following report of the Infirmary for the year 1919-20:

With the ever increasing number of students in our University, the Infirmary needs have long outgrown the capacity of the present temporary Infirmary building and the need of a modern fire-proof campus hospital has become imperative. Our activities are curbed for the want of space, and the overcrowding in the hospital and dispensary is not conducive to high-class service. This present structure housed the pioneer organization of the University Infirmary, the organization of medical supervision for college students. Today every large university in our country has adopted our system or some modification of it.

This past semester the Hygiene Museum, which had housed the Music Department for the past four years, was fitted out as an annex to the Infirmary by the crowding into it of twenty beds, bringing the total bed capacity of the institution to a number of sixty-eight. At times every available bed was occupied and sick students were sent to their homes for care. As the University is morally responsible for the care of these students, it is evident that the essential need of a new Infirmary is very acute. It may be possible that the Regents can make some arrangement with the Cowell estate, so that the prospective funds for the new Infirmary could be available at once. Such a measure would be of inestimable importance to the University, as the providing of a new student's campus hospital will release the present temporary structure to be used for the necessary housing of the Department of Hygiene and State Board of Health bureaus.

In the building of the new Infirmary provisions for extra facilities for the care of faculty members along the same democratic lines that have been so successfully applied to the student body should be contemplated. Some solution of this important problem should be offered by the new welfare committee recently appointed by the academic senate, so that the privileges now enjoyed by the students may be afforded to the faculty. Every year the necessity for such an arrangement is experienced; only recently a member of the faculty suffering from a communicable disease was obliged to seek relief at the County Hospital, as none of the private hospitals excepting the University Infirmary will accept such cases.

This past semester the Infirmary was pressed to its upmost capacity by a recrudescence of influenza and other respiratory diseases. The University Physician purchased fifty extra beds with complete bedding to be utilized in case of grave emergency. By the use of preventive measures such as vaccination, education, and eternal vigilance communicable diseases are constantly kept under control. The possession of a well equipped Infirmary and Department of Hygiene constitutes a very real economic asset to the University.

Research endeavors which the Infirmary during the past year has contributed to science were the observations made upon ex-service men in intestinal parasitology by Dr. C. L. McVey, senior physician for men, with the co-operation of C. A. Kofoed, Professor of Zoology. Their observations revealed the fact that 65 per cent of the oversea's men had amoebic dysentery. They also found various parasites, flagellates and worms in students who had heretofore been considered neurasthenics. Certain established methods of treatment were found to be useless and others by experiment proved to be of great value.

Our statistics on blood pressure findings were used by Dr. W. C. Alvarez, Instructor in Research Medicine, in his recent paper read before the State Medical Society. The value of intradermal smallpox vaccination and studies in certain fractures as a result of athletics will furnish material for publications in the near future.

We have co-operated with the Military Department in its request that all members of the Reserve Officers' Training Corps shall have complete physical examination and immunization against smallpox and typhoid.

To equip fully our laboratory to keep pace with the rapidly advancing diagnostic science, a modern X-ray apparatus has been ordered.

Services rendered by the Bureau of Communicable Diseases of the State Board of Health, in conducting various diagnostic tests and in the control of disease, have made it a valuable adjunct to the Infirmary.

A gradual advancement in salaries is advocated for both the medical and nursing attendants, not altogether on account of the high cost of living but in appreciation of their long and loyal service to the Infirmary and their many increased duties. The dental department will be obliged to raise the fee scale of \$1.50 per hour to \$2 per hour to conform to the rise in prices for material and salaries for the dental surgeons and nurse.

Gifts received during the last year were the annual donation from the Prytanean Society, a second donation for the Infirmary Ambulance Fund (name of donors withheld), the John Smith fund for medical books, and the William Barton fund for medical journals.

Respectfully submitted,

ROBERT T. LEGGE,

Professor of Hygiene and University Physician.

IMMUNIZATION SERVICE

BERKELEY, July 1, 1920.

To the President of the University.

SIR: Herewith is a table showing the results of smallpox vaccination of intrants during the academic year 1919-20.

SMALLPOX VACCINATIONS, ACADEMIC YEAR, 1919-20

	Vaccinia		Vaccinoid		Reaction of Immunity	
	No.	%	No.	%	No.	%
Scar absent—						
Previously unvaccinated.....	373	95	8	2	12	3
History of smallpox.....	9	21	10	24	23	55
Previously vaccinated.....	233	74	31	10	49	16
Scar indistinct.....	3	20	8	54	4	26
Scar distinct.....	....	....	3	25	9	75
	618		60		97	
Vaccinations completed.....					775	
Left University.....					4	
Total vaccinations.....					779	

It will be noted that nine intrants, giving a history of smallpox, showed no evidence of immunity on vaccination. It will also be noted that a group of twelve intrants, disclaiming previous smallpox or previous vaccination, gave the reaction of immunity on vaccination. In previous years we have had 100 per cent of vesicle formation among the previously unvaccinated, and it is difficult to explain this interesting departure from precedent. Repeated vaccination due to a partially inert vaccine, which gives no response on first attempt, will sometimes build up an immunity without scar formation, but three of these intrants showed the reaction of immunity on first vaccination, eight after only one revaccination, and one after three revaccinations. Seven of the group could not recall an attack of chickenpox, which is often confused with mild smallpox. The most probable explanation for these reactions is that the group had encountered the present mild type of smallpox epidemic in California, had obtained immunity, but had not recognized the disease.

On a basis of 4315 intrants, the following percentages for 1919-20 have been computed. These are shown in comparison with preceding years:

	1913-14	1914-15	1915-16	1916-17	1917-18	1919-20
	%	%	%	%	%	%
Intrants requiring						
Vaccination.....	31	20	21	20	21	18
Showing no vaccination						
Scar.....	19	16	17	19	18	17
Never vaccinated.....	16	6	7	8	9	9
With History of						
Smallpox.....	3	6	3	4	3	3

These percentages do not show much variation from year to year. Undoubtedly the Vaccination Act of 1911 has not as yet affected the college inrant group. On the other hand, a study made of smallpox morbidity returns by age groups shows that the disease is not only on the increase in California but that the relative increase is among school children. This is apparently due to the exemption clause in the act, a clause which the University is fortunate in having had set aside by the courts, thus permitting a general vaccination of our intrants each year.

Thirty persons were vaccinated by the intradermal method. This method is slightly more expensive than skin scarification, but has elements of safety which give great promise.

Respectfully submitted,

JOHN N. FORCE,

Associate Professor of Epidemiology.

UNIVERSITY LIBRARY

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit the following report on the progress of the University Library for the twelve months ending June 30, 1920.

Growth of the Library.—Accessions for the year exceed 21,000 volumes, indicating a normal rate of increase under existing conditions. Record of several thousand volumes still in storage does not appear in the statistics as the growth of the collection in the last eighteen months has exceeded the ability of the staff to handle it. Never in the history of the library have its resources been increased by so many large expensive works of importance to the scholar in so limited a period of time, and rarely has it been the recipient of such extensive and such valuable gifts and legacies. The special appropriation of \$10,000 made available in April, 1919, and the income from the legacy of General Carpentier made it possible to procure much that has been needed for years but which it was impossible to secure from the ordinary appropriations. Some of the more important accessions of the year are listed in the appendix to this report. Periodicals and serials currently received by purchase, exchange and gift number 8834, a net increase of 229 over last year.

Administration.—Here, as elsewhere, the spectre of inadequate compensation has cast its shadow over every activity. In the face of heavy demands consequent upon the enormous registration in the University, the increased book fund, unusually large gifts and legacies, and the establishment of the Southern Branch of the University with its summer session activities, the loss of trained assistants has been the largest in the history of the library except during the period of our participation in the war. Conditions with respect to untrained assistants differ only in this, that while the supply has not fallen off the quality has. In both cases the cause has been the same: opportunity in other fields, or in other branches of the same field, with compensation sufficient to insure a reasonable standard of living. In both cases the consequences have been the same: lowering of morale, deterioration in service, reduced output. The situation has been critical and is still far from satisfactory.

Considering ways and means to meet the emergency, the library administration concluded first, that compensation would have to be increased at once and to a degree in some measure commensurate with the advance in living costs; second, that a new salary schedule should be adopted which would be not fixed but relative and responsive to changes in the economic situation; and third, that formal recognition of the new schedule and its underlying principle should be secured from the University authorities in order to place the library service on a definite basis, clearly stated, relieving the condition of uncertainty and unrest existing in the staff and permitting a beginning to be made of the urgent tasks of rehabilitation and of grappling with the problems now awaiting solution. Obviously, the way to secure the desired flexibility in the salary schedule would be to incorporate it with, or attach it to, the new program of salaries for officers of instruction to which the University stood committed. The University authorities were asked to agree in principle to a schedule of salaries for the library staff equivalent to that for officers of instruction, grade for grade; junior assistants to receive the compensation of assistants; senior assistants, of instructors; department heads, of assistant professors; and the associate librarian and librarian, of associate professor and full professor respectively. Salaries recommended in the budget for 1920-21 were scaled to this program, but with the proviso that any increase in the existing schedule of salaries for the instructing staff which might be determined upon for the coming year should be applicable as well to the library schedule.

The budget as passed by the Regents embodied a new and considerably more generous schedule of salaries for officers of instruction. The library program was put into effect so far as the librarian, associate librarian, and department heads were concerned, but salaries of senior and junior assistants were not made to accord with the new scale for instructors and assistants. In view of the impossibility of readjusting all University salaries in this first year of the new schedule, it is recognized that failure to act on the recommendations relative to senior and junior assistants does not necessarily imply rejection of the principle underlying those recommendations. A definite decision has been requested on this point, and a conference on the subject is assured, to take place in the fall semester.

Intimately connected with the salary question is that of old age pensions or retiring allowances. Most of the large corporations and business houses organized on modern lines have adopted some form of retiring allowance for strictly business reasons. No going concern can afford to become clogged by the retention in active service of employees who have outlived their usefulness. Every going concern realizes the importance of retaining its skilled employees for the full period of their usefulness because that usefulness increases, as a rule, in direct proportion to length

of service. In large libraries or library systems the vast majority of assistants are women who expect to be permanently dependent upon their own earnings. The need for making adequate provision out of those earnings for the time when employment ceases enters into all their calculations. A period of economic upheaval which reduces the purchasing power of the dollar reduces also, or wipes out entirely, the possibility of making such provision, and induces a feeling of uneasiness frequently leading to abandonment of the chosen profession with its inadequate compensation in favor of some line of work in which rewards are greater. Today the cry for trained assistants is sounding from almost every large library in the country. Obviously, in view of the lack of any general provision for the superannuated librarian comparable to that of the Carnegie Foundation for teachers, the establishment here of some plan for safeguarding the future would operate as a stabilizer and would tend to offset the attraction of higher salaries that other libraries now offer or that other kinds of employment assure. Of the twenty-eight members now constituting the regular staff of this library, five antedate the librarian, who joined the staff ten years ago. Fourteen members have a record of service with this library exceeding five years; twelve have been appointed within the last two years. If recruited to full strength tomorrow, more than fifty per cent of the staff would hold appointments bearing dates within the last twelve months. Several recently vacated positions are still unfilled, as it is increasingly difficult to replace trained assistants by others with the necessary qualifications at the compensation offered. The location of this University and conditions of work here counteract in part only the modesty of the salary schedule.

Turning to the other aspects of the matter, every large library is faced with the problem of the superannuated employee. Humanitarian considerations will not permit the institution summarily to discharge the employee who has given the best years of his life to the service when he can no longer give a dollar's worth for a dollar; this feeling is especially strong, probably, in a university community. And yet it is unfair to the taxpayers and to the users of the library to retain him in active service. It is also unfair to the library administration, which has to balance achievement with cost and make a favorable showing. A pension or annuity system provides the solution to the problem.

The only reasonable objection to a plan which offers so many advantages is the ever present consideration of expense. But it is demonstrable that started now in our library and on the basis of the staff as at present organized, the annual cost would be very slight; probably less than the cost of failure to make some provision, if the considerations in the preceding two paragraphs could be expressed in terms of dollars and cents. The advantages would be very real; not the least being the prestige to be gained by the university's taking the lead in a movement

which, sooner or later, is bound to be universal. It is a simple business proposition.

The unprecedented demands of the last year upon the library, with the numerous resignations from the staff, resulted in a partial breakdown of the service. The books and periodicals which came to us through the discontinuance of the department library of the College of Agriculture have been made available for use, but the records have not been consolidated and in the case of the great mass of unbound material, are still far from complete. The Stephens library has not been released to the University, but we should have been unable to begin work on it in any case. The Voorsanger library is still untouched, and the same is true of numerous smaller gifts. Current accessions by purchase, especially those needed for class work, have been kept fairly well up to date, although there have been certain annoying delays. The reference department, crippled by the loss of an experienced assistant and by the demands of the library science courses upon the time of the reference librarian, has been overworked. The sorting and recording of miscellaneous pamphlets were suspended of necessity, and this material has been accumulating for months. Some of it is of the greatest value for the study of current political and economic problems; but individual pamphlets in an undigested mass of many thousand items are practically useless. For the present the clipping and mounting on cards for inclusion in the depository catalogue of entries from the British Museum monthly accessions list has been abandoned, and the printed cards for German dissertations, published by the Royal Library in Berlin and accumulated in Berlin since the severance of communication with Germany in 1915, are piled on our shelves in unopened packages. The personnel of the recataloguing division has been drawn upon frequently to help the overburdened departments concerned with essential current work, and toward the end of the fiscal year was materially reduced to balance the financial strain imposed by the emergency demands of the other departments. Its record of production is correspondingly low. The circulation department was unable to carry out its accustomed program of checking stack and seminar rooms owing to the necessity for meeting increased pressure at the loan desk and more particularly in the reserved book room, and for coping with the new conditions introduced by the intersession and the reduction in vacation periods. In normal years the vacation periods provide the breathing interval necessary to preparation for the summer session and the fall semester respectively. Accurate and speedy service in this department depends upon thorough familiarity with the routine and ability intelligently to handle the constantly arising demands and situations which vary from the normal. The continually changing personnel of the student assistants upon whom the department is compelled to rely (the superintendent of circulation and two typists are the only members of the

department not in this category) has resulted in marked deterioration of the service and much consequent complaint. Conditions at the loan desk have been bad; in the reserved book room they have been very bad. Increased compensation is the remedy for the situation at the loan desk. When good men can easily get positions in Berkeley paying from fifty to seventy-five cents an hour, the library cannot attract the best for wages which do not reach fifty cents until the fourth year of service. The trouble in the reserved book room is partially due to insufficient compensation, but more particularly to physical conditions which call for remedy at the earliest possible moment, as indicated in the third paragraph below.

The growing complexity of the library rather than increase in its size or in the number of users tends to enhance the cost and the difficulties of administration. For instance, if all books belonging to the General Library were assigned definite locations, indicated by the call numbers on the cards in the catalogue, and might be expected to be in those locations when not actually in use by readers or in process of reshelfing, rapid and accurate service at the loan desk would be possible and should be rendered. As a matter of fact, at the present moment there are approximately twenty thousand volumes not in their places as indicated by the catalogue, and not charged to readers or in process of discharge and reshelfing. The reader who tries to secure one of these books through the ordinary processes of the catalogue and the loan desk has no way of knowing that it is temporarily housed in the reserved book room, in one of the sixty-odd seminar rooms or offices in the library building, or in some department library or office in another building; and the data on the call slip does not convey this information to the attendant who handles it. It is not practicable to indicate temporary changes of location in the catalogue; the information is contained in the charging record at the loan desk. The attendant handling a call slip submitted by a reader first looks for the book in its indicated location in the stack, and failing to find it, consults the charging record. If the book is in the reserved book room the reader is so informed; if temporarily in another building it may be recalled by telephone or otherwise, in which case the time of its arrival at the library will depend upon the availability of a messenger. If in a seminar room or office in the library building it is theoretically obtainable for temporary use through the loan desk service; but at busy times it is not always possible to spare a loan desk attendant to go to a remote part of the building to get it. Under these conditions service at the loan desk is necessarily slow, but could be improved by increasing the number of attendants on duty at busy times, and even more effectively by offering inducements sufficient to attract more students of the better grade to our service and making it worth their while to stay with us throughout their courses. Before the war we had no

difficulty in securing student assistance of the type desired to the extent of our needs; but the pre-war scale of compensation is no longer attractive, and the service has deteriorated accordingly.

The situation in the reserved book room presents a problem of a different kind. Approximately fifteen thousand volumes are shelved in this room, with a turnover of about 150 per cent in the course of a year; the principal movements occur in August and during the Christmas holidays. These are the books to which undergraduate students are referred by their instructors for required or collateral reading, and most of them are in heavy demand since there are not nearly enough copies to meet the needs of the large undergraduate classes. To prevent a monopoly of the books by the first comers a rule limits their retention to the library building and to the day of issue, unless drawn after 9:00 p.m. for overnight use. As the reserved book room has seats for only about 140 readers, it is not practicable to restrict more closely the use of books in particular demand, or to exercise more supervision than is provided by a nightly check and the imposition of penalties for failure to return books by closing hour. This looseness of supervision permits abuses on a large scale which cannot be brought home to the offenders. The student who tries fully to obey the rules is placed at a serious disadvantage. In consequence the feeling is spreading that it is justifiable to obtain a reserved book by any means. Increase in the number of copies of books most in demand, particularly of those which are expensive, would relieve the situation, and in fact a move in this direction has been made in some of the larger classes, the books being purchased from student fees. The increase in registration, however, has outdistanced the growth of the collection; and at any time the change of a text would wipe out all progress made. The alternative solution presents so many other advantages that it should not be considered from the standpoint of the reserved book problem alone. It involves a considerable initial outlay but no increase in running expenses, and so far as the handling of the reserved books goes insures better service, more satisfaction to the majority of readers, and greater security for the books; the statistics of loss given on another page show that this last consideration is of some importance. Also, the removal of a tempting opportunity to secure advantage by illegitimate means would not be without its effect on the moral tone of a certain portion of the student body.

The solution proposed hinges upon the erection of a nine-story steel stack in the present court in accordance with the original plans; this is the principal item of expense. The erection of this stack would make it possible to move the Bancroft Library to the fourth floor, throwing the east corridor and studies into a reading room with direct access to the eighth and ninth stories of the new stack, which would be partitioned off from the rest of the stack. The space now occupied by the Bancroft

Library would become a reserved book room, and would connect with a large new reading room to be formed from the east corridor and seminar rooms on the ground floor; both rooms to be served by the present Bancroft Library stack. The new room would furnish accommodations for six or seven hundred readers, and would provide opportunity for the new departure in the handling of reserved books so urgently called for but impossible under present conditions; namely, the restriction in use of books in great demand to periods of an hour or two hours. This would be effected by requiring such books to be used in the room and at specified seats, a regulation not feasible in the present reserved book room with its limited capacity. The furnishing of the new reading room would constitute the second and last large item of expense involved in the proposed plan.

The advantages of the new arrangement would be manifold. The new reading room would relieve the present congestion. During term time it is not uncommon to find several dozen students distributed on the stairs and even seated on the corridor floors. There is a constant tendency to crowd into rooms with available seats, even though the use of such rooms is theoretically restricted. The Bancroft Library, because of its situation near the main entrance, is the principal sufferer; its reading room, supposedly reserved for advanced students and research workers, generally is filled with undergraduates seeking only seats and table space. Legitimate users of the Bancroft Library would benefit by its removal to more secluded quarters, and the space it now occupies would revert to the use for which it was originally intended, that of a general reading room. The two stories of the new stack devoted to the Bancroft Library would furnish ample accommodation for an indefinite future, not only for the books but for the newspapers. These latter now are inconveniently located in the court, on temporary shelving, and not readily accessible. The elimination of the ground floor rooms on the east side would work little hardship, as the single-unit rooms at the north end are used for office purposes by the Department of History, and a reassignment of rooms on the fourth floor would meet this need. The two-unit room, 130, is a lecture room exclusively, and the four-unit room, 129, housing the library of Historical Sources, was assigned for this purpose temporarily and on the understanding that it might be necessary at a later date to cancel the assignment and use the room for other purposes. It is possible that provision could be made in the new stack for keeping this collection together and for giving qualified students access to it. The erection of the new stack would permit a rearrangement of the stack contents which would increase rapidity of service at the loan desk, and would also provide greater facilities for the use of the stack by members of the faculty and graduate students, and make it possible to admit such students more freely. Existing accommodations are wholly insufficient and necessitate

the exclusion of many persons who should have access to the stack. Moreover, if the library continues to grow as it is now growing, the present stack will be overcrowded within three years. There is no real economy in permitting the stack to become so congested that several thousand volumes must be shifted to make room for every hundred accessioned.

Accessions Department.—While the total accessions show an increase of about three thousand volumes over those of last year (see appendix), there is a decrease in the number received by purchase; a condition due partly to enhanced prices, and partly to slow receipts from Europe occasioned by the crippled condition of the European book trade and difficulties of transportation. Many European orders placed early in the year, which in normal times would have been filled in the course of the year, are still outstanding.

The most troublesome feature of our European relations is the condition of the files of German periodicals. At the outbreak of the war our subscriptions to continental periodicals were about evenly divided between a firm in Berlin and an importer in New York. When communication with Germany was shut off by the blockade our Berlin agent, who held the bulk of our German orders, was instructed to continue our subscriptions and to hold the accumulated material until it should be possible to forward it. The fact that our orders were in the hands of a German agent prevented us from profiting by the efforts of the American Library Association and the Library of Congress to procure special dispensations for American libraries dealing with local importers or agents in neutral countries, but as these efforts do not appear to have achieved any marked success we probably did not suffer materially from our exclusion. Certain libraries having representatives in Europe were able to obtain some service from Germany, but we were less fortunately situated. Matters were further complicated for us by the death of the head of the Berlin firm, apparently followed by demoralization in the firm, and by a fire in the Leipzig warehouse containing much of the stock of our New York agent. The associate librarian attended a meeting of representatives of the large university and reference libraries called in Chicago in December for the purpose of finding some way out of the common difficulty. Plans there evolved were largely neutralized by the action of the German government in imposing an export duty on German books and periodicals, and more particularly by the decision of the German book trade to set an arbitrary and greatly enhanced price on German publications sold outside of Germany. In consequence, importers in this country and many German firms with American customers seem afraid to proceed with business on the customary and necessary credit basis. The difficulty is not confined to the completion of files for the period of the war, but

involves current service. If the situation does not improve very materially in the near future it may be necessary to send a representative to Germany to deal with the situation at first hand. Quite recently, however, whether owing to improved trade conditions or to representations couched in language more vigorous than diplomatic, something tangible has begun to emerge from the German chaos. The next few weeks should tell the story which will determine our future action. No effort will be spared to solve this difficulty at the earliest possible moment, for non-receipt of the German periodicals constitutes a serious handicap to the progress of investigation, research and publication in practically all of the scientific departments and causes great inconvenience otherwise.

Dislocation of relations consequent upon the war makes it impossible at this date to tell upon what exchanges in central Europe we can still depend. Large shipments of material from the Scandinavian countries have been received by way of the Smithsonian Institution, but nothing has come in from Germany or Austria and little from the rest of the continent. Exchange relations will be resumed as rapidly as conditions permit.

Accessions through the bindery have fallen off about one-sixth as a result of increased costs and in spite of a considerably enhanced binding fund. The budgets from 1910-11 to 1918-19 inclusive carried appropriations of \$5000 annually for binding. Despite war conditions this appropriation fell so far short of our needs in 1918-19 that the binding fund was increased \$1000 by transfer of an unexpended balance. The budget for 1919-20 provided \$7000 for binding, and last March an additional \$1500 was appropriated as an emergency measure. The budget for 1920-21 carries a binding appropriation of \$10,000. If this sum is made available it will enable us this year to do just about the same amount of binding as we did for \$5000 five years ago; this despite reduction in our specifications and the practical elimination of leather. Comparison of the binding records of 1914-15 with those of July-December, 1919, shows the average cost per volume to have jumped from \$1.10 to \$2.32. In view of steadily rising costs it is evident that even the generous binding appropriation for the coming year will not enable us to meet the demand created by an enhanced book fund, extensive gifts and legacies, accumulation of continental periodicals for the period of the war, and the greatly increased wear and tear on books reserved for class use. A cheaper style of binding with special sewing better adapted to rebinds has been adopted to meet the peculiar needs of books in this last category. About a thousand volumes of class reserves were rebound in the last year.

The record of accessions is no adequate indication of the increased work which has fallen upon this department, since books ordered for use outside of Berkeley are generally shipped directly to the department or institution concerned and are not accessioned here. For example, during

the year 650 volumes were purchased for the Southern Branch and orders placed for nearly 200 magazines, none of which appear in the record of accessions. By the transfer of the library of the College of Agriculture more than 600 periodicals were added to our current list which do not appear in our statistics. Many of these which duplicate files in the General Library and others which are unsuited to our needs are being weeded out as authority to dispense with them can be obtained; but meanwhile they are carried on our records. In this connection it is of some interest to note that accessions to departmental collections are nearly double those of last year. In the main this increase is due to large purchases from student fees of books for class use, principally for the departments of Economics and Political Science. These books receive the same treatment as General Library books and are usually shelved in the reserved book room, but are classed as departmental books.

Reclassification and Recataloguing.—At the beginning of January the handling of all accessions, in reclassified portions of the library as well as in those still under the old classification, was transferred from the recataloguing division to the catalogue department, and corresponding adjustments were made in the personnel. The recataloguing division is now concerned exclusively with the task of reclassification and recataloguing, and the catalogue department has entire responsibility for the cataloguing phase of the current activities of the library. This separation of an essential activity from an undertaking temporary in its nature and which, important as it is, nevertheless can be slowed down or postponed as an emergency measure without affecting the current work of the library, seemed desirable for several reasons, and proved especially timely in view of the situation created by the unforeseen demands of the year and the frequent resignations from the staff. Between resignations and the requirements of other departments which had to be met at the expense of the one part of the library not working under pressure of current demand, the recataloguing division was seriously crippled. The output was about 3000 volumes short of last year (26,201 volumes as against approximately 29,000). Read in connection with that portion of last year's report which points out the impossibility of making real progress under the less unsatisfactory conditions existing a year ago, these figures are significant. If financial conditions permit, the recataloguing division must be built up next year to a point which will insure a substantial reduction annually in the mass of material still to be reclassified.

During the year the recataloguing division completed the large classes C and D (History), transferred completely U and V (Military and Naval Sciences) and made good progress with T (Technology). The transfer of the library of the College of Agriculture to the General Library has determined the choice of the next class to be taken up, which will be

S (Agriculture). This will obviate the necessity for a double handling of these books in the process of incorporating them in the General Library.

At the request of the public departments the portion of the shelf-list covering the reclassified sections of the library was moved in September from the catalogue room to the space immediately in rear of the loan desk, where it is available for use by members of the faculty and others having stack privileges as well as by assistants in the reference, loan and shelf departments. To replace it in the catalogue room the official catalogue was changed from an alphabetical to a classed arrangement, the handling of some 54,000 cards occupying about nine weeks at a total cost of \$130. The shelf-list in its new location is proving a most useful tool, offering as it does to the research worker and specialist the great advantage of a classed catalogue, though of course without analytics.

Old Catalogue and Depository Catalogue.—The 18,800 volumes put through during the year by the catalogue department include, as explained above, the accessions of the last six months, whether falling under the old or the new classification. The Armes library is also included, with the exception of certain duplicates which are to go into the English seminar room. About one quarter (2500 volumes) of the books received from the College of Agriculture have been incorporated in the main collection. The department must be increased, at least temporarily, if in addition to its normal work it is to undertake the cataloguing of the Stephens and Voorsanger libraries and the smaller gifts which still await attention. The Stephens library particularly should be made available as soon as possible.

In August it became necessary to release Miss Nella J. Martin from the work of filing in the public catalogue in order to allow her to devote full time to the growing work of the library science courses. Before giving up the filing Miss Martin completed a highly important undertaking; the combination of the old author catalogue with the new catalogue in dictionary form. It was an arduous task demanding unremitting toil and the most painstaking accuracy, and its successful accomplishment is a cause for congratulation. The filing was continued by Miss Susan H. Mackay until the middle of May, since which time it has been necessary to revert to the discredited practice of dividing responsibility for this work, the catalogue department and the recataloguing division each filing its own cards.

During the year more than 41,000 cards were filed in the depository catalogue. In the summer of 1919 Miss Gladys B. Bendure succeeded Miss Hahn as curator. Undoubtedly the depository catalogue has suffered from frequent changes in curatorship, but the experience gained by those who have worked on it is of great value. The accumulation for the war period of cards for German dissertations issued by the Royal Library in Berlin

was received some months ago, but so far it has been impossible to incorporate these cards in the depository catalogue.

Loan and Shelf Department.—The increased pressure upon the library due to the heavy registration, which is referred to so frequently in this report, is reflected in our statistics in various places, but nowhere so plainly as in the statistics of circulation. The number of volumes issued over the loan desk exceeds last year's total by 33,000, while the increase in circulation from the reserved book room exceeds 175,000 volumes. The total increase over last year's figures is more than 50 per cent (619,000 volumes as against 411,000). This does not show the use made of the many thousands of volumes in the reference collection, seminar rooms and departmental libraries, of the stack contents by readers having access thereto, or of the thousands of unbound periodicals in the periodical reading room and the bound volumes (the so-called "Poole Sets") on the adjacent open shelves.

Another indication of the pressure upon the library is the record of losses, which, despite the protection afforded by the present arrangements for handling reserved books, are the heaviest in the history of the library. Excluding books recorded as missing at some period during the year and which eventually found their way back, the final records show 532 volumes missing from the stack and the reserved book room and 340 from departmental libraries. Inadequate supervision in several of the departmental libraries leads to disregard of the regulations, and many of the books recorded as missing doubtless have been carried to other parts of the buildings or to their homes, without the formality of a record, by members of the faculty or students in the departments concerned. This is primarily a matter of departmental concern and touches us only in so far as books belonging to the University Library are not obtainable when wanted. We are fundamentally concerned, however, with the question of loss from the stack and the reserved book room. The rather hampering present limitations on admission to the stack are necessitated by physical conditions and are not the manifestations of a definite policy; but if anything could justify the deliberate imposition of rigid restriction on admission, it is the year's record of 183 volumes missing from the stack. The significance of this figure lies in the fact that probably 98 per cent of the persons with stack privileges, or to whom such privileges have been extended at some time during the year, are members of the faculty or registered graduate students.

There will always be a small percentage of loss attributable to kleptomania and the determination of unscrupulous persons to appropriate property for personal profit; that is difficult to guard against without restricting the use of the library in a manner and to an extent wholly undesirable. The principal loss, however, occurs in the reserved book room, and undoubtedly is attributable to the limited number of copies of

books available for required reading in large undergraduate classes and the impossibility of adequately supervising the use of these books in their present location. The number of volumes lost from this room during the year and still missing at the present date is 349. These losses occur in three ways, one of which will be eliminated by the remodeling of the return desk. The others may be controlled by increasing the force of attendants sufficiently to supervise certain portions of the enclosure furthest removed from the desk, by insisting upon strict compliance with the existing rule prohibiting the carrying of books and handbags into the enclosure, and requiring every borrower to identify himself by displaying his registration card with each call slip presented. The remedy is clumsy and expensive and would inevitably slow up the process of issuing books at periods of special congestion such as occur at the end of each hour from 8 a.m. to 5 p.m.; but it would put a stop to the thefts from this room, which is important less from the intrinsic value of the property lost than from the interference with work occasioned by the depredations of an element—a regrettably large element—of the student body. A better remedy, and one entirely adequate to meet the situation, is in the hands of the students. If they will not apply it there can be no reasonable ground for objection to the measures which the library will be obliged to take, and responsibility for the resulting inconvenience must rest upon themselves. The textbook collection cannot be enlarged from the library appropriation to an extent commensurate with registration in the large undergraduate classes, and no other sufficient funds are provided. The new reserved book reading room cannot be expected for some years, and the situation demands immediate action.

A brief analysis of the expense of maintaining the loan and shelf department may be of interest. The department is responsible for service at the loan desk and in the reserved book room, for shelving all books, for the checking and general maintenance of stacks, reading rooms and seminar rooms, and for checking department libraries. With the exception of the department head and two typists all employees are student assistants, whose average wage at this time is below normal because few have been with us long enough to attain the higher rates of pay. The average is approximately 36½ cents an hour for the ordinary attendants, with higher rates (45–65 cents) for those in charge of various branches of the work. For the regular session the weekly cost of the loan desk is \$176.37, of the reserved book room, \$149.68, and of shelving in stacks and seminars, \$59.91; a total of \$385.96 per week for forty-two weeks. For the vacation period the weekly cost of the loan desk is \$68.31, of the reserved book room, \$29.13, and of shelving in stacks and seminars, \$42.39; a total of \$139.83 per week for ten weeks. To the combined total of \$17,608.62 for the purposes indicated should be added \$849.54 for special assistance in getting out books for class reserve three times a year.

checking the stacks, the department libraries, etc., and providing substitutes for those attendants entitled to vacation allowance; bringing the total expense for student assistance alone in this department to more than \$20,000 for the year. The amount will vary somewhat from year to year, as the average wage varies or as new demand, such as was imposed this year by the intersession, necessitates additional assistance; but the figure given is a fair average for a year under present conditions. Beyond doubt economies might be effected if it were possible to replace some of the student assistants by permanent members of the staff; but the experience of many years has demonstrated that in this locality at least, men or boys of the required type will not stay long at this kind of work. To pay enough to hold such men would necessitate a complete revision of our salary schedule, and it is doubtful whether the result would compensate for the added expense. While we cannot claim to have attained it yet, there is a point beyond which improvement in the service involves disproportionate cost. Wise administration will strive to approach this point as nearly as may be without passing it.

The intersession, which was not taken into account when estimates were prepared for the 1919-20 budget, caused some complications through dislocation of vacation schedules, the necessity for employing additional student assistants, and elimination of the quiet period usually devoted to shifting the contents of the reserved book room and seminars in preparation for the summer session. The handling of many thousand books and periodicals from the library of the College of Agriculture occasioned a good deal of confusion. The transfer of the collection to the General Library about the middle of July, 1919, did not allow sufficient time for consolidation of records or for remarking of books which had been given Decimal Classification numbers in the department library, before the fall semester opened. Progress was made during the year in absorbing this collection, but the heavy demands upon it and the difficulty of meeting them promptly and satisfactorily under the conditions, occasioned some complaint. An additional source of trouble was found in the large number of books charged from the department library to various divisions, offices and individuals in the department. The charging records are incomplete and inaccurate and the checking of them preparatory to their incorporation with the records of the General Library is proving a slow process, as hundreds of cases have already arisen which required individual adjustment. A great many items, both among those recorded as charged and those supposed to be on the shelves in the departmental library, have not been accounted for as yet; but until the confused threads are all untangled it does not seem advisable to list such books as definitely lost. This condition has subjected the General Library to some criticism, as it has not been clearly understood that a good deal of material supposed to be in the departmental library was never received by the General Library.

Reference Department.—The increased enrollment in the University brought its proportionate increase in work to the reference department also, but the means for obtaining relief operative in other departments are denied to the reference department where untrained assistance cannot be utilized. In facing the heaviest year in its history the department was handicapped by the loss of one of its experienced assistants, while the demands of the library science courses upon the time of the reference librarian limited the possibilities of readjustment to meet the emergency. As a measure of the work of the department under existing conditions, records of all requests for information and assistance received at the reference desk were kept during one month (November). They show 7473 such requests; an average of 239 per day.

The discontinuance of the library of the Department of Agriculture transferred to the General Library the reference questions formerly handled in the department library, and increased very considerably the work in this field. The situation was complicated by the conditions described in the second paragraph preceding, and by the fact that exigencies of space required a division of the great mass of unbound periodicals and pamphlets received from the department library between the basement and the ninth story of the stack, a distance which could not have been exceeded much within the walls of the building. As the records turned over with this material were practically useless, any reference to it required the personal visit of a member of the department to one or other of these localities, and often to both. Some very vigorous work by the library committee of the College of Agriculture finally brought order out of this chaos and some tons of unnecessary agricultural printed matter were disposed of to the paper mill, reducing the accumulation to manageable limits. The more important periodical files are now shelved until bound in the periodical reading room, and the remainder are so disposed as to be usable, though the records are not complete as yet.

In January a student assistant was assigned to the department for three hours a day to carry some of the manual labor connected with the administration of the periodical reading room, and to conserve the time of the regular assistants by doing the frequent errands requiring visits to distant parts of the building. Routine work is still much in arrears, and until the additional assistance provided in the new budget is available and trained, it must remain so. Some of the activities suspended perforce during the year are mentioned in the first part of this report.

Reading lists and short bibliographies on a variety of subjects have been compiled by the department. The titles of a few of the more important are: relation of the faculty to the governing board in American universities, mortality rate from electric shock, electoral system of France, salaries of teachers, pyrex glass, fig culture in California, rural schools and democracy. We are indebted to Miss Fanny Borden, refer-

ence librarian of Vassar College, for permission to utilize her bibliography entitled "College government and administration, excluding salaries and pensions." Miss Borden, who was on leave of absence from Vassar gathering material for her bibliography and who visited Berkeley in March, was interested in the work being done by our reference department on the first of the bibliographies before mentioned. Both subjects are of peculiar interest in university circles at this time.

Library Staff.—Several members of the staff conducted courses in library science, notably Miss N. J. Martin, senior assistant, whom it was necessary to release from all other duties; Miss E. M. Coulter, reference librarian; Mr. S. B. Mitchell, associate librarian; Miss A. S. Pratt, senior assistant; Miss A. M. Cole, senior assistant; and Mr. F. M. Bumstead, superintendent of circulation. The additional burden of instruction was assumed without compensation, time and labor being cheerfully devoted to a cause of professional importance and interest. In view of the facts, reluctance to grant some measure of academic recognition to those giving such instruction is hard to understand. Since the University accepts the library science courses for credit, there is no reasonable ground for denying to instructors in those courses the same recognition accorded to instructors in regularly organized departments of instruction in technical subjects, including membership in the Academic Senate. Such recognition is not denied to instructors in the fine arts, in engineering, or in medicine, although professional work in these fields does not lead to the doctorate of philosophy. If Princeton, Michigan, and Minnesota grant definite academic rank to librarian, assistant librarian and reference librarian, as they do—if Yale and Wisconsin extend such recognition to include department heads and Columbia extends it to certain senior assistants* as well, as they do—if Stanford grants to members of its library staff "Classification and such status in the Academic staff as their salaries may justify," as it does—surely the matter has passed the experimental stage.

The loss of trained assistants during the twelve months has seriously handicapped the library in its effort to deal with the abnormal conditions of the year. The accessions department and the recataloguing division have been particularly affected, but every department has suffered to some extent. In some cases the loss to us has been compensated by distinct professional advancement to the individual; in nearly every instance the change has brought financial betterment. A few typical cases are those of Miss Browning, now librarian of the Oakland High School, Miss Criswell, now head cataloguer in the library of the University of Idaho, and Miss Kilbourn, now cataloguer for the Mechanics-Mercantile Library in San Francisco. Miss Pratt has accepted a most flattering offer from the

*Called Bibliographers.

Yale University Library, and will leave us at the end of July to become assistant reference librarian at Yale, with the rank of assistant professor in the University.

Appointments.—Esther D. Hahn, junior assistant, July 1, 1919; Susan H. Mackay, junior assistant, August 25, 1919; Louise Le Breton, clerical assistant, October 13, 1919; Raymonde Le Breton, clerical assistant, December 11, 1919; Katherine R. Wickson, junior assistant, December 17, 1919; Mrs. Daphne Fortney Daus, junior assistant, January 1, 1920; Edith Edinburg, junior assistant, February 16, 1920; Ethel Isaacs, clerical assistant, March 15, 1920; Elinor Hand, librarian's secretary, March 22, 1920; Minnie A. Lewis, senior assistant, April 1, 1920; Hilda von Soosten, librarian's secretary, May 29, 1920; Edith M. Maslin, junior assistant, June 1, 1920; Mrs. Florence I. Wendering, clerical assistant, June 15, 1920.

Resignations.—Irma Brink, junior assistant, July 6, 1919; Janet Willon,* clerical assistant, July 23, 1919; Josephine Halverson,* clerical assistant, August 18, 1919; Gertrude H. Horn, clerical assistant, October 8, 1919; Lois Criswell, senior assistant, November 30, 1919; Renée C. Noble, clerical assistant, December 20, 1919; Edna Browning, senior assistant, December 25, 1919; Gerda Frederiksen,* junior assistant, December 31, 1919; Katherine Kilbourn, junior assistant, January 17, 1920; Mrs. Julia Benjamin Merchant, clerical assistant, January 23, 1920; Raymonde Le Breton, clerical assistant, February 29, 1920; Linnie M. Ryan, librarian's secretary, March 23, 1920; Louise Le Breton, clerical assistant, March 25, 1920; Gertrude E. Phipps,* senior assistant, March 31, 1919; Edith Edinburg, junior assistant, March 31, 1920; Susan H. Mackay, junior assistant, May 15, 1920; Elinor Hand, librarian's secretary, June 1, 1920; Minnie A. Lewis, senior assistant, June 30, 1920; Marion E. Houston, clerical assistant, June 30, 1920.

In June Miss Coulter and Miss Pratt attended the American Library Association Conference at Colorado Springs, and Mr. Mitchell, Miss Fredrick, and the librarian were present at the Riverside meeting of the California Library Association in April.

Library Training.—This year for the first time all four courses in library science were offered, embodying the full program of instruction planned in 1918 and begun last year with two courses. The class, limited to thirty, was selected from a considerable body of applicants. Of the eighteen who completed the work in May eleven were graduate students and the rest seniors. Nine had taken the first two courses last year; nine took all of the work in one year.

The major part of the instruction was given by members of the library staff as indicated in the announcement, but the program required specially qualified instructors to handle phases of library work foreign to a university library. Although the courses as outlined called for no small expenditure of time, thought and labor on the part of the instructors, in practically every instance our requests for assistance were met with ready and cheerful acquiescence. It is a pleasure to record our very considerable

* Transferred to hour basis to permit broken schedule.

indebtedness to Mr. Carleton B. Joeckel, librarian of the Berkeley Public Library, Miss Mary Barmby, librarian of the Alameda County Free Library, Miss Helen Price, librarian of the University High School in Oakland, Mrs. Katherine Newhall Lee, Pittsburgh Carnegie Library School, '19, Miss Ione Tucker, in charge of the children's room in the Berkeley Public Library, Mr. Albert H. Allen, long identified with publishing and printing as manager of the University of California Press and in other capacities, and Miss Louise Ophüls, librarian of the Lane Medical Library in San Francisco. Members of our own faculty to whom thanks are due for generous aid cordially rendered are Professors R. W. Gordon, Chauncey W. Wells, Leonard Bacon, Samuel J. Hume, George R. Noyes, and Perham W. Nahl, Mr. W. W. Lyman, Jr., Miss H. G. Eddy, and Miss Rosamond Parma, librarian of the Law Library.

The work of the year was undertaken in full realization of the fact that it was in a measure experimental, and with the intention of profiting by experience in planning for the future. On the whole the program as originally drawn seems to meet the requirements of undergraduate instruction very well, although minor readjustments are indicated, certain prerequisites must be imposed in the future, and considerably more practice work must be required in connection with certain of the courses. The demand for instruction in library science in the University is clearly established and it seems probable that we can count upon a considerable number of graduate students and of seniors who wish to take the four courses in one year, although the experience of another year will show more plainly whether this is actually the case. Certain fundamental facts have been clearly demonstrated which should now be carefully considered with a view to placing library instruction here on a more satisfactory basis than is possible through any mere development of the present plan.

First, the library science courses should be put on a graduate footing as soon as possible. The chief weaknesses which developed during the year were the immaturity and lack of background of many of the students, and the difficulty of securing the proper attitude toward professional training from students taking the library science courses along with other work in the University. Second, the library science courses should be developed as a school of library science with a faculty of its own, membership therein to consist in part of instructors engaged for this work alone and not members of the library staff. It is altogether desirable that certain phases of library work should be taught by persons actually engaged in the work; but in fairness to the individuals and to the library, the strain of the last year upon the members of our staff engaged in teaching must be materially lessened. A satisfactory course of instruction of graduate quality should deal with much that was merely touched upon this year, but further development of the present courses is out of the question unless the teaching force is increased in the manner indicated.

Following negotiations relative to desirable extensions of our course dealing with county libraries and California library law, the State Librarian notified us about the end of May that the State Library School would be discontinued with the graduation of the present class and that the State Library would give all its influence "towards making the school at the University the best library school in the country." This attitude of cordial coöperation is highly appreciated. The State Library School was established primarily with a view to training librarians and assistants for the county library service; but with the development of our general course sufficiently to cover this ground, it was felt that the maintenance of a second institution for this special work would be inadvisable. The coöperation of the State Library will take definite form in the assignment of a specially qualified instructor to handle this phase of our work next year, and in assisting us to place our students in county libraries or in the State Library for the required practice work.

Inter-library Loans.—Our loans to other institutions, including departments of the University outside of Berkeley but excluding the Southern Branch, numbered 398 (455 volumes) as against 225 (476 volumes) last year. Our borrowings numbered 190 (239 volumes) as against 84 (138 volumes) last year. For assistance courteously rendered we are especially indebted to the Library of Congress, the libraries of Stanford University, Yale University, Harvard College, and the University of Chicago, the Lane Medical Library in San Francisco, the John Crerar Library, the Surgeon General's Library, and the library of the United States Department of Agriculture; and we have drawn upon several other libraries on one or more occasions. Our exchanges with Stanford have been fairly even, and we have been able to be of some service to officials of the Department of Agriculture and of other scientific branches of the government situated in California; for the rest the indebtedness is all one way. The embarrassment caused by non-receipt of our German periodicals has necessitated more frequent borrowing than would have been necessary under normal conditions.

The calls upon us have come principally from departments of the University outside of Berkeley, especially the University Farm at Davis, the Citrus Experiment Station and the Scripps Institution, and from Stanford; with the sister university our relations are most cordial and satisfactory. The state universities of three neighboring commonwealths and one institution in Canada have drawn upon us frequently, and there is a steady demand from smaller institutions of collegiate rank in California, as well as from county and municipal libraries. The frequency of these scattered requests, and the ensuing conflict with a local demand which was straining our resources to the utmost, became so embarrassing that it was deemed advisable to embody our rather haphazard policy

in a series of regulations to guide our future activities in this field. This was accordingly done, and the regulations preceded by a statement of policy are presented herewith for purposes of record.

INTER-LIBRARY LOANS

The University of California Library is organized as a reference library, primarily for the use of faculty and students offering or receiving instruction or engaged in research in the University of California, and is in no sense a general lending library. The use of the reading rooms and the facilities of the reference department are open for legitimate purposes to all, but the privilege of withdrawing books from the library is definitely restricted to students and officers of the University, and to certain classes of other persons specifically designated in the Standing Orders of the Board of Regents. In view of the rapidly increasing number of requests for the loan of books to other libraries, and the necessity for acting upon such requests in conformity with the general policy of the library in the matter of loans, it is deemed advisable to draw up regulations for the handling of inter-library loans. These regulations, which derive largely from the codes of the Library of Congress and the Harvard College Library, were approved by the Library Committee of the Academic Senate on December 22, 1919. It is not to be understood that these regulations are absolutely rigid and to be applied in all cases regardless of merit, but exceptions will be made only when good and sufficient reason is adduced therefor.

Policy.—Under the system of inter-library loans the University of California Library will lend certain books to other libraries for the use of scholars engaged in teaching or writing or scientific investigation. The loan will rest on the theory of a special service to scholarship which it is not within the power or the duty of the local library to render. Its purpose is to aid serious research by the loan of *unusual* books not readily accessible elsewhere. The material lent cannot include books that should be in a local library or that can be borrowed from a library (such as a state or county library) having a particular duty to the community from which the application comes, books that are inexpensive and easily procurable, books for the general reader, text-books, or books desired for ordinary student or study-club work or simply for self-instruction; nor can it include works of reference, books reserved for class use or referred to for collateral reading or otherwise in constant use here, volumes from sets of periodicals or publications of learned societies which it would be difficult to replace, or in general books which by reason of their rarity, size or character it is deemed inadvisable to expose to the vicissitudes of transportation. Books will not be lent for class-room use.

In consequence of the increasing demands upon the library's resources at home, it is expected that so far as possible persons not connected with the University who may desire to consult books belonging to the University Library, shall do so upon the premises. This precludes loans to libraries in the San Francisco Bay region unless under very exceptional circumstances.

Procedure.—The librarian making application for an inter-library loan shall state for whom the books are desired and for what purpose, in order that the request may be tested by the rules set forth above. The borrowing library is understood to assume full responsibility for the safe-keeping and prompt return of the books at the expiration of the time designated.

Books will be loaned ordinarily for two weeks or for one month, according to circumstances, the time to be reckoned from the date of receipt by the borrowing library to the date of return shipment; but all books loaned are subject to recall if needed, and if recalled must be returned promptly. If renewal is desired, application must be made in advance of the date set for return. The borrowing library is expected to apply to the material borrowed the same safeguards that it would apply to material of its own, requiring to be used only on its premises that which it would not itself lend for use outside. Books will be forwarded by express, or insured, when such precautions are deemed necessary for their safety; and the same precautions shall be taken by the borrowing library when making return shipment. All expenses of carriage are to be met by the borrowing library. Receipt of books borrowed shall be acknowledged at once, and when books are returned notice of return shipment shall be sent by mail at the same time, so as to permit of prompt tracing of shipments which go astray. Neglect of these requirements, or carelessness in packing books, or in keeping them beyond the time specified for the loan, may be considered good grounds for declining to lend in future.

Financial Statement.—The library budget for 1919–20 carried appropriations as follows:

Salaries and assistance (including recataloguing).....	\$56,840.00
Binding	7,000.00*
Expense and equipment	6,000.00
Books	30,642.00
Total	\$100,482.00

The appropriation for books consists of the following items:

Income from gift funds restricted to specified uses	\$8,872.00†
Income from Reese fund (general)	\$2,920.00
Income from Davis fund to June 30, 1919 (general)	850.00‡
University appropriation	18,000.00
	<hr/>
	21,770.00
	<hr/>
	\$30,642.00

Distribution of \$21,770.00:

Periodicals and sets	\$8,000.00
Works of general interest	2,250.00
Librarian's fund	1,200.00
Special grants (French and History)	550.00
Departmental allotments on unit basis	9,770.00
Total	\$21,770.00

Respectfully submitted,

HAROLD L. LEUPP,

Librarian.

* Increased to \$8500 by special appropriation in March, 1920.

† Includes \$5630 income from bequest of General Horace W. Carpentier, to "be used by preference for the purchase of books and other materials of instruction and research relating to the five great areas of Asiatic civilization."

‡ Income for 1919–20 allocated to the Bancroft Library.

APPENDIX

A. ACCESSIONS OF NEW BOOKS, 1919-20

	Volumes	Volumes
By purchase	6,811	
By binding of periodicals	2,471	
By exchange	640	
By gift	5,298	
Received by department libraries (all sources).....	6,179	
	<hr/>	21,399
Volumes in library June 30, 1919		392,682
		<hr/>
		414,081
Volumes withdrawn or lost, 1919-20		257
		<hr/>
Volumes in library June 30, 1920		413,824

B. IMPORTANT ADDITIONS, 1919-20

- Andrews. Botanist's repository. 1799. 10 vols. in 5.
Audsley. Ornamental arts of Japan. 1882. 4 vols.
Bellman. (Minneapolis). 1906-19. Vols. 1, 4-5, 7-8, 10, 12-26.
Biologia centrali-americana, ed. O. Salvin and F. D. Godman. Zoology section, completing our set of the whole work.
British medical journal. 1872-1908.
Cartulaire général des hospitaliers de Saint Jean de Jerusalem, 1110-1310.
Codices graeci et latini. 16 vols. Sijthoff reproductions.
Cuvier. Histoire naturelle des mammifères. 1824-35. 3 vols.
Demosthenis codex; facsimile du manuscrit grec 2934. 1892.
Dresser. History of the birds of Europe. 1871-96. 9 vols.
Enseignement mathématique. 1899-1917. Vols. 1-19.
Euclid. Elements of geometrie . . . now first translated into the English tongue by H. Billingsley. 1570.
Filchner. Ergebnisse der expedition nach China und Tibet, 1903-05.
Gibb memorial series. 29 vols.
Gould. Birds of New Guinea. 1875-88. 5 vols.
Gould. Mammals of Australia. 1863. 3 vols.
Gould. Monograph of the Trochilidae. 1861. 5 vols.
Guthrie. New geographical, historical and commercial grammar. 2 vols. Rare second American edition. 1815.
Jan and Sordelli. Iconographie général des ophiidiens. 1860-75.
Lepsius. Denkmäler aus Aegypten und Aethiopien. 1839-55. 12 vols.
Luzac's Semitic text and translation series. 17 vols.
Malherbe. Monographie des picidées. 1861-62. 4 vols.
Martin. Miniature painting and painters of Persia, India and Turkey. 1913. 2 vols.
Martius. Flora brasiliensis. 1840-1906. 40 vols.
Mathews. Birds of Australia. 1910.
The Massorah, arranged by C. D. Ginsburg, with translation into English. 1880-1905. 4 vols.
Millais. Natural history of British game birds. 1909.
Naples. R. Accademia di scienze morali e politiche. Atti, 1864-1909. Vols. 1-38.

New age (London). Complete from beginning to 1918.
Numismatic chronicle (London). 1838-1907, completing our file.
Platonis codex parisinus; facsimile . . . manuscrit grec 1807. 2 vols.
Revue de science et de législation financières. 1903-1918. Vols. 1-16.
Revue des deux mondes. Completion of our set.
Rivista di diritto pubblico. 1909-16. Vols. 1-8.
Stars and stripes. Complete file of original issues of this A. E. F. paper.
J. S. Signal office. About 300 photographic prints, $6\frac{1}{2} \times 8\frac{1}{2}$ inches, illustrating the war activities of the 91st Division, U. S. A.
Vasari. Lives . . . trans. by Gaston De Vere. 1912-16. 10 vols.
Vigouroux. Dictionnaire de la Bible. 1891-1912. 10 vols.

C. SOME GIFTS AND LEGACIES OF 1919-20

The personal library of the late Professor Henry Morse Stephens came to the University at his death in April, 1919. It contains about 12,250 bound volumes and much unbound material. Reflecting as it does a life peculiarly rich in varied interests both human and scholarly, this library will add materially to our resources. Its most valuable portion is the extensive collection relating to the British in India, containing many items of considerable rarity and some that are unique. The Kipling and Omar Khayyam collections were Professor Stephens' two great hobbies; the former in particular is valuable as containing every edition of the author's collected works known to Professor Stephens, every obtainable significant edition of the individual books, and innumerable periodical articles and newspaper clippings. The collection relating to the French Revolution and Napoleon is fairly extensive and the greater part of it is not now represented in the University Library. During his life Professor Stephens's library was always open to his students and his many friends, and it was his wish that after his death it should be incorporated in the University Library in such manner as to be most widely useful, and not maintained as a separate entity. The wish is characteristic of the man.

In December Rabbi E. C. Voorsanger and his brother William C. Voorsanger, '96, presented the bulk of the private library of their father, Rabbi Jacob Voorsanger of Temple Emanu-El in San Francisco. Rabbi Jacob Voorsanger was Professor of Semitic Languages and Literatures at the University of California from 1894 until his death in 1908, and it was his expressed wish that his library, which he valued highly, should eventually go to the University. This valuable collection consists of approximately 1800 volumes besides numerous pamphlets, mainly in the field of Semitics.

The continued benefactions of Mr. J. C. Cebrian added more than 450 volumes to the Spanish collection during the year. It is largely owing to Mr. Cebrian that this part of the library has grown so greatly during the last decade and become, particularly in the modern field, a splendid working collection for students of Spanish literature.

The musical library of the late Enid Williams was presented by her mother, Mrs. Evan Williams of San Francisco, last August. The library, which consists of some 214 volumes of musical scores and books, will be known as the Enid Williams Memorial and the volumes have been distinguished by a special bookplate, as it is not required that the Memorial be maintained as a separate collection. Mrs. Williams has defrayed the cost of binding some of the scores, and has made additions to the original collection.

A check for \$15.00 was received in September from an unknown Hindu student, accompanied by a letter which is worthy of preservation in the records of the University. It reads as follows:

"I beg to introduce myself as a Hindu student, who graduated from the University of California recently.

"With the view of continuing my studies further, I worked in summer vacation, and, when I returned here a week before going to the University of Illinois, I find that I have hardly enough money to pay the train fare and also to meet the college expenses of at least one term.

"In my undergraduate period I always thought that I should do something for the University after my graduation. But I deeply regret to say that my above financial situation can't enable me to do anything. And, if I postpone, I still feel doubtful as to whether I will ever be able, because something else may then be waiting for me.

"Under the circumstances I am sending you herewith a cheque of \$15.00 for buying any books for the University Library. And I hope you will kindly grant my request by accepting the cheque.

"Please note that this is not in return for what I got from the University. Because, if I simply wish to return the money which the University had to spend for me (about \$300 per annum), I know that it is now out of my power to do so. In short I realize as to what the University suffered for me. And wherever I may be, I can't forget the everlasting obligations which she has conferred upon me; and, if possible, will try my best to do something for her. I am writing the words "if possible" above, because India, considered with respect to industrial developments, is in a very crude stage. So much of my time will be devoted for the purpose, which probably may keep my mind into oblivion about the University affairs here.

(Signed) "A HINDU STUDENT."

Through the kind offices of Mr. Francis Hill Bigelow of Cambridge, Mass., the library received from Mrs. Barrett Wendell a handsome volume entitled *The Old Silver of American Churches*, by E. Alfred Jones, privately printed for the National Society of the Colonial Dames of America.

Mr. T. S. Brandegeer presented a rare botanical work: Desvaux, N. A. *Observations sur les plantes des environs d'Angers*. Angers, 1818.

A most interesting gift is that of a copy of the *Belgischer Kurier*, published in Brussels on Armistice Day. The *Kurier* was the official organ of the German administration in Brussels. On the night of November 10-11, 1918, the German soldiers mutinied and themselves brought out the issue of the 11th. This copy was presented to Dr. Langley Porter of San Francisco by Colonel (now Brigadier General) H. T. Hughes, commanding the Canadian engineers before Ypres. The library is indebted to Dr. Porter for the acquisition of this rare war item.

James Hopper, '98, presented forty-seven articles contributed by him during the years 1914-1919 to various American periodicals, in continuation of three volumes (100 items) formerly donated. The articles include stories and descriptions of the Mexican expedition of 1916 and of the great war.

William von Phul, Jr., '24, has added to the coin collection 139 pieces mostly bronze, of various European nations. Some of the coins are of early date and quite rare.

The will of the late General Horace W. Carpentier bequeathed to the University \$100,000, the income from which in accordance with the

commendation of President Wheeler, is to "be used by preference for the purchasing of books and other materials of instruction and research relating to the five great areas of Asiatic civilization, particularly China, Japan, India, Arabia, and Babylonia. Most accurately of all purposes that have been suggested will this use of the bequest represent General Carpentier's thought and desire. It furthermore would concur most exactly with the duty opening before this University in the wide fields of the Orient." (From President Wheeler's recommendation to the Finance Committee of the Board of Regents, June 30, 1899, approved by the Regents at the meeting of July 8.)

Mention should be made also of the gifts of some 370 bound volumes and 128 pamphlets and reports, mainly in the field of philology, by President Emeritus Wheeler; 70 volumes from the library of the late Professor Hlgard by his daughters; 198 miscellaneous volumes with 16 pamphlets and some duplicates by Miss Elizabeth Whitney Putnam of San Francisco; and a set of photographs of the delegates to the Peace Conference at Versailles by the San Francisco branch of the L. E. Waterman Co.

Among the numerous additions to the University Archives during the year may be mentioned: Congratulatory addresses from various institutions throughout the world upon the semicentenary of the University, and upon the installation of President Barrows; the flag of the University (nets presented by Mrs. Hearst, April 26, 1900; the flag of the U. S. School of Military Aeronautics, given by Mayor and Mrs. Samuel C. Ling to the School; a bronze medal sent by the University of Paris in recognition of this University's service in the great war; from Mrs. L. S. Irchard, the class album of the Class of 1875, containing also a full set of photographs of members of the faculty and two views of the campus at that date; from the Archivist, an album of photographs of the Class of 1874.

BANCROFT LIBRARY

BERKELEY, July 1, 1920.

To the President of the University.

SIR: We have the honor to submit the report of the Bancroft Library for the year ending June 30, 1920.

During the year the Library has been the recipient of a number of valuable gifts. Mr. E. L. Doheny gave \$300 as a continued expression of his interest in the prospective publication of documents relating to the early exploration of California by the Spaniards. A collection of manuscript and printed materials relating to labor conditions in Mexico and the Southwest was received through the will of Mr. John Murray, who was closely identified with the movement which resulted in the organization of the Pan-American Federation of Labor. Professor Percy A. Martin of Stanford University was executor of Mr. Murray's will. Captain J. L. Underhill of the United States Marine Corps, stationed at Managua, Nicaragua, has manifested his interest in *alma mater* by arranging for the deposit in this Library of a collection of the public documents of the Republic of Nicaragua. Mr. Genaro Estrada of Mexico City has been constantly attentive in providing numerous publications of the Mexican Government. Professor Raúl Ramírez, Chilean Exchange Professor of History, has presented a large number of volumes of Chilean history and literature. Mr. F. P. Howard presented an antique cannon-ball taken from the cliffs of Drake's Bay and a breastplate from Bolinas Bay which are historical curios of interest.

Numerous gifts of printed materials have been received. The accessions of printed materials have amounted to about 400 items, for which about \$400 was expended. Manuscripts from the archives of Mexico and Washington, numbering about 7500 pages, were acquired at cost of \$750.

The recataloguing of the printed materials of the collection covered some fifteen hundred items. The catalogue has been made more serviceable for research work by the inclusion of cross references adapted to the highly specialized needs of investigators in the field of history covered by the Library. The work of classifying and cataloguing the unique newspaper collection has progressed as rapidly as the shelving space will permit.

The research activities carried on through utilization of Bancroft Library materials include investigations embodied in a number of completed doctoral dissertations. Among these are the study of The Expansionist Movement in Texas, 1836-50, by W. C. Binkley, Chief Assistant in History; of The Federal Indian Policy in the Pacific Northwest, 1849-70, by Dr. C. F. Coan; and of The Relations of the United States and Mexico, 1848-60, by Dr. J. F. Rippey. Dr. Mary F. Williams continues preparation for publication of her thesis on the San Francisco Vigilance Committee of 1851. Research approaching completion by members of the personnel includes studies of the Spanish system of colonial defense, of the agrarian legislative problem in Mexico, and of the administrative reforms of Charles III of Spain in America. J. J. Hill, Assistant Librarian, is compiling and editing a collection of original documents illustrative of early western exploration. A large number of masters' theses have been prepared from the materials contained in the collection. Some of the general results of the research activities of the director are contained in the history of *The Colonization of North America, 1492-1783*, written in collaboration with Dr. T. M. Marshall, soon to appear from the Macmillan press.

The California Historical Survey Commission, which is housed in the Bancroft Library, published Dr. Owen C. Coy's *Guide to the County Archives of California* at the beginning of the calendar year. Dr. Coy continues the work of the commission in his survey of the Franciscan missions, which is to be embodied in published reports. The survey of San Carlos Borromeo Mission is ready for the press and those of San Luis Obispo and San Diego missions are approaching completion. The commission continues preparation for publication of the record of California's part in the Great War.

The enlarged activity of the Bancroft Library has been fostered by generously increased appropriations, but it may be reiterated that the widely developed interest in Spanish American and Western history has increased the scope of publication in the field of the Library to such an extent that constantly growing funds for purchase of materials are imperative if research is to keep pace with progress. Money for increasing the availability of the collection and for adding to its content is constantly needed in liberal amount. With the acquisition of the Library the University came into possession, not of a thoroughly developed stock of materials for research work, but of a constantly growing obligation to provide means for adequate utilization of opportunity.

Respectfully submitted,

HERBERT E. BOLTON,
Director.

HERBERT I. PRIESTLEY,
Librarian.

LICK ASTRONOMICAL DEPARTMENT
LICK OBSERVATORY

MOUNT HAMILTON, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit herewith my report for the period July 1, 1919, to June 30, 1920.

The staff of the Lick Observatory returned to prewar size and efficiency in July, 1919, and the research has progressed satisfactorily throughout the year.

Dr. G. F. Paddock, in charge of the Chile Station of the Lick Observatory, reached Santiago, Chile, in September. He and the Assistant C. M. Huffer, devoted several months to repairing the buildings, instruments, electric power line up Cerro San Cristobal to the Observatory et cetera, with such skilled and unskilled help as could be secured. Following these repairs, the scientific work was renewed under favorable conditions late in the academic year. It is probable that prewar efficiency has by this time been reached.

The principal buildings on Mount Hamilton have been kept in good repair. This cannot be said of the many cheap, small buildings which dot the mountain top. I refer chiefly to the wooden residences of the workmen's families. These were erected, in the main, by the builder of the Observatory in the 1880's as the summer quarters of the workmen. They were mere shells and were not intended to survive the construction period. With the opening of the Observatory, on June 1, 1888, the need for increased residence space developed rapidly. The temporary wooden shells were ceiled inside and supplied with partitions to divide them into living rooms, and, in many instances, both in the 1880's and in the early 1890's, small annexes to the buildings were constructed. One of these residences, for example, was built in nine sections and at nine different times. These improvements, if they may be called by that name, were financed from the annual budgets of the Observatory when small sums could be spared for the purpose. Sources of funds for the building of appropriate residences were not available. The structures in question are unworthy of the institution which they serve. They can be described most aptly as undignified and uncomfortable makeshifts. They should be replaced at the earliest practicable moment by residences inwardly comfortable and outwardly worthy of their surroundings.

The construction of a building to house the electric engine and storage battery, the carpenter shop, the instrument making shop, the plumber's room, et cetera, begun in 1917 on the basis of a special state appropriation, and stopped early in 1918 because of war requirements, has not been resumed. Provision should be made for the renewal of construction in the near future.

The front entrance of the main building, embodying the elaborate but unhappy ideas of the architect, was seriously damaged by the extremely heavy earthquakes of 1903, 1906, and 1911. It was entirely severed from the remainder of the building by a continuous and wide crack, and smaller cracks weakened the severed section. These have been filled on several occasions, but it is impossible to make permanent repairs. The entrance should be torn down and reconstructed in more appropriate design.

The northeast corner of the main building was likewise damaged on the same occasions. This section also calls for biennial repairs, at increasing expense, and the shattered parts of the wall should be reconstructed.

The residence occupied by the director's family should be remodeled and enlarged. It may safely be said that no other observatory of appreciable size in any part of the world is equipped with a director's residence on such a small and modest scale.

The Director's annual report is for the first time burdened with references to the inadequate and defective buildings, in order to emphasize the fact that a building problem exists on Mount Hamilton. An appropriate building programme, calling for annual destruction and construction through an estimated term of years, should be decided upon as early as possible. To this end it is hoped that the University Architect and the Director of the Observatory may be authorized to formulate a proposal, under the guidance of the President and the members of the Lick Observatory Committee of the Board of Regents, for the consideration of the authorities of the University.

Volume XIII, Publications of the Lick Observatory, composing one of the Semicentennial series of University publications, was received from the University Press late in January, and copies were at once distributed to the corresponding astronomers and institutions in all countries except those of central and eastern Europe. It is planned that the remaining copies shall be distributed upon the formal conclusion of peace and the coming of settled political conditions. This volume, bearing the title "Studies of the Nebulae," containing the results of extensive investigations made by W. W. Campbell, Director and Astronomer, W. H. Wright, Astronomer, H. D. Curtis, Astronomer, J. H. Moore, Associate Astronomer, and Mr. Wilson, has received many favorable comments.

The work of the year in the meridian circle department, relating to the accurate determination of stellar positions, conducted by Astronomer

R. H. Tucker, has been confined largely to the reduction of fundamental observations secured in previous years. The right ascension reductions are complete and the declination reductions will be finished in a few months. The results in right ascension have been studied thoroughly with reference to systematic differences in the positions of the stars as observed with the instrument in the two positions, fixed circle east and fixed circle west. The observed right ascensions have been compared in detail with those of the same stars contained in Boss's General Catalogue, in search of systematic errors, if such exist. The Boss and Tucker right ascensions for the stars concerned are in excellent and satisfactory agreement. Assuming that the minute differences between the Boss results corrected for all known source of error and the Tucker results uncorrected for magnitude equation are due to the latter factor the magnitude equation computed to harmonize the two series is in essentially perfect agreement with that deduced by Mr. Tucker from his observations made to evaluate that factor in many different years.

The few observations of stellar positions made by Mr. Tucker within the year have related to a limited number of stars involved in other researches, here and at other observatories, and to programmes comprising stars which cross the meridian shortly before and after sunset and shortly before and after sunrise in further investigation of anomalies which appear to occur in observations made at these times of the day.

The meridian observations obtained since 1904 are in manuscript form, ready for publication, except as to those secured in a part of one year. Mr. Tucker's observations from 1893 to 1904 appeared in volume IV, VI, and X, Publications of the Lick Observatory.

As a related problem Mr. Tucker is making a study of terrestrial latitude variations for longitude 120° west and for Mount Hamilton from the observational results secured throughout the world in the last thirty years and from his own observations extending over a quarter of a century.

The 36-inch refractor has been used two nights per week by astronomer R. G. Aitken in the study of visual double stars. The work of remeasuring the double stars of his own discovery has advanced to such an extent that fewer than 500 of his 3015 pairs remain to be reobserved. The recent observations agree with those of preceding years in showing that about 15 per cent of the Aitken double stars are in orbital motion about their centers of mass with speeds sufficiently rapid to be detected in the eight to fifteen years which have elapsed since the dates of discovery. Seven or eight per cent of the pairs are moving with speeds which indicate relatively short periods of revolution. These pairs should be observed regularly and frequently until their orbits are determinable as they will make a relatively large increase to the number of known short-period double stars.

Observations of especially interesting binary stars discovered here and elsewhere by other observers have also been continued. About a thousand complete sets of such measures have been obtained within the year.

Orbits have been computed for the visual binary systems, Burnham 52, Burnham 1111, Burnham 1185, Struve 412, and Otto Struve 341. The last mentioned system is of special interest in that the orbits have the remarkably large value of 0.96 for the eccentricity. It is now generally accepted that forces within a binary system could not develop so great an eccentricity if the system owed its origin to the fission of a single stellar or nebular mass. This statement suggests one of the chief objects for which visual double stars are now observed—to secure reliable data for the study of the origin and evolution of such systems.

Mr. Aitken has secured micrometer observations of the diameter of the nebular disk in Nova Aquilae III, showing that the diameter increased from 2".4 in August, 1919, to 3".7 in June, 1920, confirming and valuating the expansion of the disk indicated on the spectrograms secured by Mr. Moore.

The 36-inch refractor has been used on the other five nights of the week in the photography of stellar spectra. Four hundred and sixty-five spectrograms have been obtained with the 3-prism Mills spectrograph for the determination of stellar radial velocities. These refer chiefly to stars whose visual magnitudes are between 5.2 and 5.5. The exposures have been relatively long, averaging about three hours each. The plates have been secured chiefly by Mr. Moore and Mr. Thiele, Assistant in Astronomy, and in lesser degree by Mr. Campbell, Mr. C. D. Shane, Fellow in Lick Observatory, Mr. H. M. Jeffers, Fellow in Lick Observatory, Miss P. Fairfield, Fellow in Lick Observatory, Miss E. E. Cummings, Fellow in Lick Observatory, and Miss Heger. These spectrograms have been measured and the measurements converted into radial velocities almost exclusively by Miss A. M. Hobe, Assistant in Lick Observatory, and in part by Mr. Thiele. Between fifteen and twenty of the observed stars have been found to possess variable radial velocities, thus indicating that they are binary systems.

One hundred and ninety-two other spectrograms have been secured with the 36-inch refractor, about equally divided between 1-prism and 2-prism dispersion, in the study of especially interesting stars. These will be referred to more in detail in other paragraphs.

Astronomer William H. Wright has been engaged almost exclusively in observing the spectra of new stars, using the 36-inch refractor and the Crossley reflector, and in the study of spectrograms of present and past novae secured by him and other members of the Lick Observatory staff. Harvard College Observatory this year has made a special search for evidences of new stars as recorded on their great collection of

spectrograms extending through a full generation. Their plans have been successful in that four new stars were discovered in this manner, and such of these as still existed in sufficient brightness and in observable positions have been studied by Mr. Wright. Among the especially interesting phenomena encountered is the peculiar distribution of the light radiations in the nebulous disk of Nova Aquilae III. It was found that the light falling in different parts of the bright spectrum bands originated in different parts of the nebular envelope, and that the radiations of different wave lengths furnish nebular images of different sizes. Mr. Wright has been asked to devote his time in the coming year to the further study of nova phenomena, past and present, with a view to extensive and prompt publication upon this important subject.

Mr. Wright was at the Mount Wilson Observatory during a fortnight in June, on the invitation of Director Hale, to use the 100-inch reflecting telescope in special observations of the planetary nebulae, with the help of our slitless quartz spectrograph which had given such excellent results when attached to the Crossley reflector. The weather was generally unfavorable through the period of observation, covering eight nights, but a number of excellent spectrograms were secured. These will be described in due place and time. Acknowledgments are due to Director Hale for extending the invitation, and thus making possible a test of the advantages of the vastly greater telescope in delicate observations of this kind.

Several 1-prism spectrograms were obtained by Associate Astronomer J. H. Moore with the 36-inch refractor in continuation of his programme for the determination of radial velocities of the very red Class N stars. In addition to the eight Class N stars previously observed in this manner, two or more spectrograms have been secured for twelve stars. The results for the twenty stars will be ready for publication shortly. They will form an important contribution to our knowledge of the motions of this class of objects.

Very interesting spectrographic observations of Nova Aquilae III were inaugurated in July and August, 1919, by Mr. Moore and Mr. Shane, and continued in June, 1920, by Mr. Moore. These observations, combined with those by Mr. Aitken already mentioned, establish that the nebular disk (doubtless a globe in 3-dimensional space) surrounding the stellar nucleus and composing a part of this interesting object is expanding in diameter at the apparently uniform rate of $0''.16$ per month, or $1''.85$ per year. The radiation bands in the spectrum of this object are from fifty to sixty angstrom units in width. It had been considered here and elsewhere that these great widths might be the direct evidence of the high radial velocities of expansion of the nebular globe, an expansion at the rate of 3600 km./sec. for the effective surface stratum of the globe. Mr. Moore's recent observations have developed a seemingly

fatal objection to this hypothesis. The green nebulum images (N_1 and N_2) are apparently expanding at an angular rate twice as great as the rate for the hydrogen (H) image, whereas the nebulum bands and the hydrogen band have equal widths, sixty angstroms. If the hypothesis described represented the truth, the H band should in fact have less than one-half its observed width. The great widths of the radiation bands must clearly be due to causes other than radial velocities.

Mr. C. D. Shane, Fellow, received the degree of doctor of philosophy at the Commencement in May. His thesis was entitled "On the Nature of the Class N Spectrum." His studies related especially to the brightest stars of this class, 152 Schjellerup and 19 Piscium. Some of the principal results are: the existence of hydrogen and the vapors of carbon, iron, titanium, vanadium, chromium, sodium, manganese, calcium, scandium, and yttrium in the atmospheres of these stars was established; the presence of lanthanum, barium, cadmium, and zirconium is probable, but not certain; prominent among the spectrum lines of several of the above elements are those known as low temperature lines, thus indicating that in these very red stars the effective surface temperatures are comparatively low; the numerous bright lines in the spectra could not be identified with known chemical elements, except those which have long been recognized as due to radiating hydrogen; three narrow absorption bands conform to the first group of bands in the Swan spectrum of carbon, and the other four Swan groups are prominently represented; certain correspondences with and divergences from the Class R and Class M spectra and certain similarities to sunspot spectra were noted.

Mr. Shane has also been making an investigation of the visual and ultra-violet sections of the spectrum of the long period variable α Ceti. Among the results obtained may be mentioned: certain absorption bands in the visual regions are almost certainly identical in position and in their characteristics with bands ordinarily occurring in the arc spectrum of yttrium; all of the hydrogen bright lines from H to H₁₇, seventeen in number and widely varying in intensities, were recorded. Two of these lines, H and H_k, showed large displacements from the normal positions of the hydrogen lines, for reasons unknown.

One hundred 3-prism spectrograms have been secured at the Chile station, in recent months, by Messrs. Paddock and Huffer.

Mr. Campbell has been engaged upon an extensive study of the systematic errors in the radial velocities of the brighter stars, as observed since the year 1896 at the Lick Observatory and since 1903 at the Chile Station. These errors, in part due to systematic tendencies of the reduction tables employed, in part to the personal equations of the plate measurers, and in part to causes still unknown, are quite accurately determinable, and they will be satisfactorily eliminated from the final results. These results from all the stellar radial velocity observations made in both hemispheres will soon be ready for printing.

Astronomer H. D. Curtis has continued with the Crossley reflector the photographic survey of the larger and apparently more interesting nebulae of the northern three-fifths of the sky. In the course of this survey three additional planetary nebulae were discovered. Descriptions of these three objects will be prepared, in text and drawings, for reproduction as a supplementary sheet to the descriptions of all previously known planetaries, as published in Volume XIII, Publications of the Lick Observatory.

The greater part of Mr. Curtis's time in the year has been devoted to measuring and reducing the large photographs obtained at the solar eclipses of 1900 and 1918, in search of the deflection of the rays of light from stars observed nearly in the direction of the eclipsed Sun, as predicted by the Einstein theory of relativity. The plates of 1900 were not taken for this purpose and their value is limited. The 1918 plates were obtained in accordance with a definite Einstein programme, but the photographic apparatus then available was not of the best: the instruments of higher quality, which we had hoped to use, were en route from Russia, and did not reach the United States until more than two months after the date of the 1918 eclipse. The probable errors of the measured positions of the stars, about $\pm 0''.30$, are larger than was anticipated, and the deduced results have corresponding limitations of accuracy. Early in June an improved method of measuring the plates occurred to me, and Mr. Curtis is at present repeating the measures, on the new plan. He will remain at Mount Hamilton a short time following June 30, in order to complete the measures and calculations leading, it is hoped, to results more reliable as to the Einstein effect. At this date a further statement of results is not justified.

Robert Trumpler, Martin Kellogg Fellow since August 1, 1919, has been engaged almost exclusively upon an exceedingly comprehensive study of the Pleiades star cluster, with four purposes in mind: (1) to determine the relative positions of the more than nine hundred stars of the cluster which are brighter than photographic magnitude 14.5; (2) to determine the proper motions of these stars in direction and rate; (3) to determine the magnitudes and spectral types of the component stars; (4) to study the constitution of the cluster, as indicated by the first three results described. Position observations of the Pleiades group have been numerous, as made by meridian circles, micrometers, heliometers, and cameras. Mr. Trumpler obtained a series of position photographs of the cluster at the Allegheny Observatory before coming to Mount Hamilton. He is combining the star positions as deduced from his measures with those obtained by the many earlier observers, on the basis of least square solutions, and several additional months will be required to complete the work. It is believed that the results will represent a higher standard of thoroughness and accuracy than has thus far been attained in problems

this nature. They should be of great value to astronomers of the distant future who will attempt to determine the laws of motion of the stars composing isolated clusters of this kind.

Mr. Trumpler has eliminated certain weaknesses in the available data concerning the cluster by securing micrometer observations of certain of the stars with the 12-inch refractor.

Mr. H. M. Jeffers, Fellow, has observed the positions of the following comets and asteroids, on the basis of photographs secured with the Crossley reflector: 21 observations of Comet *a* 1919, 3 observations of Comet *b* 1919, 4 observations of Comet *c* 1919, 2 observations of asteroid Psyche, 3 observations of asteroid Achilles, 4 observations of asteroid 1920 GM. He has obtained micrometric observations of comets and asteroids, with the 12-inch refractor, as follows: 5 observations of Comet *a* 1919, 7 observations of Comet *b* 1919, 9 observations of Comet *c* 1919, 4 observations of Comet *d* 1919, 1 observation of asteroid Psyche. He secured Crossley reflector photographs in duplicate of six ecliptic regions, in compliance with the request of Professor Stroobant of the Brussels Observatory, to assist in his statistical studies of asteroid distribution.

Mr. Jeffers and Miss Heger have computed preliminary elements and ephemerides of comets *b* and *c* 1919. Mr. Jeffers has computed later and more accurate elements and ephemerides of Comet *b* 1919.

Miss E. E. Cummings, Fellow, has taken a prominent part in devising and in supervising the construction of a photo-electric cell photometer to be used on the 12-inch refractor for observations of the brightness of stars, planets, et cetera. The mechanical parts of the instrument were constructed in part at the Lick Observatory and approximately one-half in the instrument shop of the Department of Physics. Acknowledgments and thanks are due to Professor E. P. Lewis for this great favor and courtesy. Studies of various problems arising in this connection have been made by Miss Cummings, in the Department of Physics, under the kind and efficient guidance of Elmer Dershem, Instructor in Physics. It is hoped that the completed photometer will be ready for installation in the month of July. The purchase expenses and the construction expenses in Berkeley have been defrayed from funds (\$800) given by the late Agent Phoebe A. Hearst, who had specified that this sum should be used to meet any of our urgent needs. It is proposed that the instrument shall be known as the Hearst Photometer.

Miss M. L. Heger, candidate for the degree of doctor of philosophy, has been investigating the behavior of the D lines of sodium for certain binary stars in whose spectra the H and K lines of calcium had previously and by others been found to remain in fixed positions, whereas other lines in the same spectra move back and forth through a wide range of positions corresponding to the orbital motions of the component stars. Miss Heger finds that the sodium lines likewise occupy fixed positions.

Other binary stars in which the H and K lines move back and forth through only a small fraction of the distances traveled by other spectral lines give results for the sodium lines in accord with those for the calcium lines. There is little reason to doubt that the calcium and sodium absorption lines do not have their origins in the pairs of stars composing the binaries, but in great envelopes containing calcium vapor and sodium which completely surround each binary system as a whole.

Keivin Burns, formerly an Assistant in the Lick Observatory, and later Physicist in the Bureau of Standards, Washington, D. C., resided at Mount Hamilton during three months in the fall of 1919, to photograph the red end of the spectrum of the Sun under high dispersion, taking advantage of recent improvements in stains which sensitize photographic dry plates to infra-red rays. Using a grating spectrograph attached to the 36-inch refractor, he was able to record the solar spectrum to wavelength 9900A, a limit, with good definition, not hitherto reached. A comparison of photographs representing the east edge and the west edge of the Sun, respectively, enabled him to discriminate between absorption lines truly solar and lines due to absorption by gases and vapors within the Earth's atmosphere. The solar lines in the region covered were extremely scarce. The spectrum of solar prominences was likewise photographed; calcium prominence lines at 8498, 8542, and 8662A were recorded for the first time.

Mr. Curtis was appointed Director of the Allegheny Observatory of the University of Pittsburgh in May, to serve from July 1, 1920. His resignation of the position of astronomer in the Lick Observatory was recommended to the President and Regents of the University of California for acceptance, with deep regret. He has been a member of the staff of the Lick Observatory since July, 1902; as Assistant to January 1, 1906; as Acting Astronomer in charge of the D. O. Mills Expedition in Chile from January, 1906, to July, 1909; and thence as Astronomer, residing at Mount Hamilton, to date. Mr. Curtis and his family are leaving Mount Hamilton with the deep regret and the best wishes of every member of the Observatory community.

Mr. Campbell was absent from June 15, 1919, to August 28, 1919, in connection with international scientific meetings, held in Brussels, Belgium, on July 18-28. He served as chairman of the American delegation of scientists in attendance at the meeting of the International Research Council, and as chairman of the American Section of the International Astronomical Union. The fulfillment of these duties took him to London, Cambridge, Brussels, and Paris, where courtesies, both personal and scientific, were generously extended, not only to him but to all the members of the American delegation present. These kindnesses are gratefully recalled and acknowledged. The international organizations established at Brussels are based upon wide experience and are designed to promote

entific research on the basis of voluntary coöperative effort. The organizers were on their guard against the dangers of over-organization and the dangers of any prescriptions which would interfere with the living of the initiative by individual investigators. It was recognized here, as well as elsewhere and earlier, that the great steps in advance science have been and no doubt will continue to be the results of individual merit and effort, but that the solution of many problems demands coöperative advice and labor, and that organizations such as these consummated can perform services of a very high order.

Mr. Campbell was elected the American Vice-President of the International Astronomical Union. The union proposes to meet triennially and successively in the leading educational centers. Rome was selected for the meeting of 1922. It is hoped that the Lick Observatory will be represented at each such triennial meeting by one or more of its astronomers.

Mr. Aitken was a member of the faculty in the Summer Session of the University of California in 1919. During the year he delivered many lectures under the auspices of the University Extension Division in various parts of the state.

Mr. Aitken and Mr. Moore represented the Lick Observatory at the Seattle meeting of the Pacific Division of the American Association for the Advancement of Science in June, 1920.

Mr. Curtis and Mr. Campbell represented the Lick Observatory at the meeting of the National Academy of Sciences in Washington, in April.

Mr. Curtis (and Dr. Shapley of the Mount Wilson Observatory) took a leading part in a formal discussion of The Scale of the Universe before the National Academy of Sciences at Washington, in April.

Mr. Campbell was elected an honorary member of the Royal Institution of Great Britain in 1919.

Albert, King of the Belgians, conferred the rank of Commander of the Order of Leopold II upon Mr. Campbell in 1919.

Mr. Curtis was elected a member of the American Philosophical Society in April, 1919.

The Director acknowledges the cordial support of all the members of the Observatory staff throughout the year.

Respectfully submitted,

W. W. CAMPBELL,
Director.

MEDICAL SCHOOL

SUMMARY OF MEDICAL SCHOOL REPORTS

SUBMITTED TO THE DEAN BY DEPARTMENTS

BERKELEY, July 1, 1920.

To the President of the University.

Anatomy.—The department has brought to a satisfactory conclusion two of the more important of the research projects which have occupied it during the last few years. These have taken the form of two memoirs, one by P. E. Smith, Assistant Professor of Anatomy, and the other by J. A. Long, Assistant Professor of Embryology, and H. M. Evans, Professor of Anatomy.

Professor Smith has treated at some length the highly interesting series of experiments which he has conducted on anuran larvae in order to determine the function of the hypophysis. His account appears as the eleventh number of *The American Anatomical Memoirs*, and is entitled "The Pigmentary Growth and Endocrine Disturbances Induced in the Anuran Tadpole by Early Ablation of the Pars Bucallis." Professor Smith was absent on semi-sabbatical leave during the first term of the present year in order to carry on further researches on the endocrine organs with Professor W. B. Cannon of Harvard University. As a result of this work there has already been published a preliminary paper by Professors Cannon and Smith on "Some Conditions Affecting Thyroid Activity." The discoveries there indicated would appear to be of unusual importance, for the investigators have made out for the first time an acceleration of cardiac rhythm due to the thyroid gland, an effect produced by mechanical stimulation of the thyroid and referable to the elimination of hormones, since it occurs with the de-nervated heart. Professor Smith is continuing his endocrine work with amphibia, employing for this purpose experiments in para-biosis, and he has also begun related work in certain mammalian forms, especially in the cat, for which the departmental facilities are unfortunately inadequate.

The work of Professors Long and Evans on the ovarian cycle of the rat was summarized in a number of preliminary communications which were presented to the American Association of Anatomists at their

meeting April 1, 1920, and which concerned: the oestrous cycle in the rat; the attainment of sexual maturity and the character of the first oestrous cycle in the rat; effect on the oestrous cycle of the removal of various portions of the reproductive system; rhythmical recurrence of the typical oestrous cycle after ovarian transplantation; the effect of copulation in delaying the occurrence of the next oestrous cycle and the production of a similar effect by mechanical stimulation of the cervix; the inhibition of oestrous and ovulation by lactation; corpora lutea of lactation in the rat as distinguished from the corpora of pregnancy and those of ovulation; the survival and time of disappearance of the corpora lutea of pregnancy in the rat under various conditions; the experimental production of deciduomata in the rat, with especial reference to the phases of the oestrous cycle; a characteristic sign of pregnancy in the rat detectable from the thirteenth to the sixteenth day. This work has been summarized in a memoir by the same authors and has been presented for publication to the University Press. In the meanwhile an extensive program of further studies on ovarian rhythm has been undertaken, studies in which a number of the graduate students in the Departments of Zoology and Anatomy are coöperating. In conjunction with Dr. Evans, Dr. Katherine Scott, Instructor in Anatomy, will devote her attention to the nutritional aspects of the subject.

V. E. Emmel, Associate Professor of Anatomy, has made a preliminary report upon the erythrocytic and leucocytic elements in the blood of *Batrachoseps attenuatus*. Professor Emmel is also at work upon a more general paper upon the process of cyto-construction in the mammalian blood elements. His studies will serve to generalize and make clear to us processes by which cellular fragments are set free in the fluid of the blood. At the same time Dr. Emmel has begun studies upon the blood picture in the oestrous cycle and in endocrine upsets.

R. O. Moody, Associate Professor of Anatomy, continues to superintend all of the department's work which is offered in satisfaction of the requirements in this subject prescribed for students in the College of Letters and Science who major in physical education, hygiene, or who are taking the joint course offered by this college and the Training School for Nurses. He is in serious need of an instructor to assist in the work. Professor Moody has also had charge of the work in topographical anatomy and in connection with this has begun highly interesting and valuable X-ray studies upon the position of the abdominal viscera. It is to be hoped that the considerable cost of continuing these studies can be met in order that statistical results may be secured.

J. A. Marshall, Associate Professor of Biochemistry and Dental Pathology, has during the last year brought to conclusion another of his papers on tooth growth and nutrition, entitled "An Experimental Study, with Certain 'Vital Dyes' of the Persistent Teeth of the Albino Rat."

The department suffers severely, as it has in the past, in the lack of adequate space and the unsatisfactory arrangement of the space which it does possess. It is becoming increasingly evident that it can not meet its responsibilities either in teaching or in research without a notable improvement in its budget for trained or technical assistants, and in this its position is no doubt not unique, but resembles that of the cognate departments of Physiological Chemistry, Physiology, Pathology, etc. The achievement of research plans upon which several workers have concentrated for some years will continue to be delayed and often prevented until the same attention is paid to adequately trained technical assistance as is now given this matter in the research institutes of the country.

Two further improvements would exert an undoubted stimulus to all research effort—the existence of one or more research fellowships in each of these departments and the liberalization of the program of studies for the doctorate in medicine so that time for these pursuits on the part of such students will be adequate.

Biochemistry and Pharmacology.—There have been comparatively few changes in the staff during the past year. The instructorship in Pharmacology left vacant by the resignation of Dr. C. B. Bennett has been filled by the appointment of Dr. Guy L. Clark, a graduate of this department and an experienced teacher. The addition of the division of Clinical Laboratories to the department necessitated the appointment of an instructor in Biochemistry who should have charge of the clinical laboratories in the various hospitals connected with the Medical School. The appointee, Dr. W. C. Rappleye, has been remarkably successful in the difficult task of organizing the work of these laboratories so as to make them of the greatest possible use to the hospitals and to the clinical staff.

The department continues to be greatly hampered in its activities by the lack of room. In the elementary course the same arrangement as regards laboratory space was made as in the year before, by the use of a laboratory in the Fertilizer Control building kindly placed at our disposal by Professor J. S. Burd. This separation of the class by distance made necessary a considerable duplication of apparatus and supplies and extra work by the staff and assistants. Even with this added space the class was much crowded and laboratory teaching interfered with. The lecture room used by this class was the pathology lecture room placed at our disposal by Professor F. P. Gay.

It is gratifying to report the increased interest in advanced work in Biochemistry taken by both medical and academic students. Both seminar and laboratory were well attended during the first semester and much good work carried on. In the second semester laboratory space for advanced work was available only in the mornings, and as a result advanced and research work by students practically ceased. Relief in

the matter of laboratory space has been promised for next year, and it is earnestly hoped that it may be given.

The department has continued active in research. Dr. C. L. A. Schmidt, Assistant Professor of Biochemistry, has continued the studies on the antigenic properties of proteins with hemocyanin and hemoglobin (in press). With Mr. E. G. Allen he has carried out studies on the fate of ingested taurin (published), with Mr. G. F. Norman experiments on eosin hemolysis of red cells (in press) and with Mr. A. E. Dart on a method for the estimation of bile salts.

Dr. E. S. Sundstroem, Instructor in Biochemistry, has continued his studies of the physiological mechanism involved in the adaptation of organisms to new environment. With Dr. W. R. Bloor, Professor of Biochemistry, he has completed a study of the effects of short exposures to low pressures on the composition of the blood. He has also completed a series of experiments on the effect of an artificially produced tropical climate on animals, with special reference to the influence of light on growth.

Dr. G. W. Clark, Instructor in Pharmacology, has devised a method for the determination of calcium in small amounts of blood, and has made a study of the effects of calcium administered in different ways and as various salts on the calcium content of the blood (in press).

Mr. G. Le B. Foster, Instructor in Biochemistry, has been studying a method for the determination of various forms of sulphur in blood, and with certain factors influencing the dextrose-nitrogen ratio in animals with experimentally produced diabetes.

Mr. S. Brody, Assistant in Biochemistry, has been engaged on a study of the buffer values of whole blood and plasma and their dialysates as shown by titration and the use of the hydrogen electrode.

Miss M. Johnson, Assitant in Biochemistry, has studied the methods of preparation of arginin from various protein substances.

Mr. K. F. Pelkan has completed a preliminary study of the effects of protein in the diet on urochrome excretion (in press).

Dr. W. R. Bloor has continued his work on the relation of phosphoric acid and its compounds to fat metabolism. With Mr. E. D. Farrington a study of the phosphoric acid compounds of the blood (plasma and corpuscles) in the lipemia produced by acute experimental anemia in rabbits has been completed. With Dr. Sundstroem the phosphoric acid compounds have been studied during short exposures to low atmospheric pressures. With Mr. D. D. Lum work is in progress on substances in the blood other than cholesterol which give the color reactions of cholesterol. With Mr. Pelkan a revision of the method for the determination of fat in blood is nearing completion. With Miss E. V. Foster a colorimetric method for the determination of minute amounts of phosphoric acid is under way.

Medicine.—A critical review of the work in medicine for the past year reveals an unsatisfactory situation which should be analyzed carefully and promptly remedied.

Successful teaching of medicine demands control of the right kind of clinical material in sufficient amount. At least one hundred beds should be provided in order properly to teach sixty students. In the San Francisco Hospital the University has charge of forty-four beds in medicine. This material is excellent and has proved invaluable to instruction of the past year. It should be the aim of the department of medicine in future to enhance the value of this service by providing money for a full-time instructor and for more complete laboratory equipment.

There are supposed to be forty beds set aside for the teaching of medicine in the University Hospital, but in the past six months there has been a steady decline in the number available for free or small-pay cases. The cost of the hospital maintenance has increased so formidably in the past two years that funds contributed by the University budget have proved more and more inadequate and the hospital has been forced more and more into private work until it is in danger of becoming essentially a private and not a teaching institution. The emergencies of the budget dictate such an alarming decrease of free beds in the coming year that it may become necessary to abandon a major part of the teaching schedule for the University wards.

The lack of stability and permanence of the University medical service stultifies any progressive scheme of departmental organization. There can be no hope of placing medicine on a finished university basis until the chief of the department is guaranteed a service of (for the present) at least fifty beds and is given the power to dictate the type of cases occupying these beds. If such a service can be provided, inducement will be offered to young assistants or instructors to give more years of their full time to the department. It is apparent that success in clinical teaching depends in greatest measure upon intimate contact of the student with his patient, his laboratory and his instructor. Forces that have gotten beyond our control are compelling our students in medicine to go too far afield for their patients, and to be in constant pursuit of too many instructors.

The out-patient department has done excellent service in the past year. It has provided some of the most satisfactory individual teaching, and has begun to develop special clinics which cannot fail to benefit largely the patients who visit them and the clinicians in charge.

It is apparent that in the near future some reorganization of the department of medicine must take place, entailing a readjustment of the relations of many members of the staff to the University. Men who have devoted years of good effort to the medical school must, of necessity,

enter new fields. A most satisfactory clinical service could be provided by the material now controlled in the San Francisco Hospital, fifty beds in the University Hospital, and some further development of the out-patient clinic. The present laboratory facilities would need moderate expansion. A step forward is to be taken next year in providing a full-time instructor in the University wards. It is most essential that a similar position be established in the San Francisco Hospital and in the out-patient department. These things done, it would not be difficult to endow the Chair of Medicine and to attract candidates to fill it most satisfactorily.

Obstetrics and Gynecology.—In common with the other clinical departments of the Medical School, the Department of Obstetrics and Gynecology has suffered greatly because of the shortage of clinical material necessitated by the lack of free beds.

During the year the following papers have been read or printed by members of the department:

Dr. Frank W. Lynch—The Problem of Uterine Cancer; Etiology and Treatment of Pernicious Vomiting of Pregnancy; The Pelvic Articulations during Pregnancy, Labor and the Puerperium (an X-ray Study); Prenatal Care; Etiology and Treatment of Retroversions of the Uterus; Chapter on "Peritonealization" for Oxford Loose Leaf Surgery.

Dr. Alice F. Maxwell—Induction of Labor by Means of Bags; Rupture of Uterus following Pituitary Extract; Conservative vs. Radical Surgery in Pelvic Inflammations.

Dr. Margaret Schulze—Encephalitis Lethargica.

Pathology and Bacteriology.—The instruction for non-medical students in the department continues to exceed, both in numbers and expense, the students enrolled in the regular course in medicine. The elementary course had an enrollment of 136, an average number. The more advanced work in bacteriology for non-professional students has continued to grow in importance, owing doubtless to the importance of this subject as brought out in the war. In the past year eleven undergraduate students have continued work in bacteriology by taking the medical training and continuing on a research problem, thereby majoring in this subject for their bachelor's degree. The training of these students is regarded as important not only for Public Health work and allied activities but as stimulating a desire for investigation which in some instances may lead to a productive career. There have been five graduate students in the department, three working for their master's and two for a doctor's degree.

The course in medical bacteriology contained not only the regular class of sixty students but an additional fifteen non-medical students who were majoring in bacteriology. This represents the maximum number

of students who can be cared for in a single section in the department. The combined course in Pathology and Bacteriology which was hitherto given synchronously in its various aspects, during one semester, was very unfortunately interfered with during the absence of the head of the department by the removal of the work in Pathology to San Francisco. Provision has been made for the ensuing year, however, to teach the essential parts to morbid anatomy in conjunction with bacteriology.

During the past year Dr. I. C. Hall, Associate Professor of Bacteriology, has been absent on leave to work for a doctor's degree in the University of Chicago, where he not only secured a fellowship but was the recipient of Rickett's prize from that university. Dr. F. B. Rosson was appointed Instructor in Pathology with work at the University Hospital during the year and will continue in this position. Dr. Marjorie W. Cook, who has performed most satisfactory work as Edith Claypole Fellow during the past year, will continue in the department on a salary obtained from the Interdepartmental Social Hygiene Board. W. H. Barnes, Instructor in Bacteriology, resigns at the end of the current year to complete his work for the medical degree. L. F. Morrison, Assistant in Bacteriology, and Mr. Stafford, Assistant, medical students of great promise, have temporarily interrupted their course to work intensively on certain problems in the department.

Budget requirements for expense and equipment were quite inadequate as appropriated last year and an additional sum was fortunately obtained through the President to continue the work of the department. It is feared that with the continued increased cost of materials that the budget for this year will not be sufficient. Fortunately, for research in the department, \$200 has been appropriated by the Research Board of the University for work on streptococcus problems, and a grant of \$3875 was granted by the Interdepartmental Social Hygiene Board for work on gonococcus.

The main problems investigated in the department this year have been the following: Extensive studies on streptococcus pyogenes, its toxin formation, the production of experimental empyema and attempts at specific serum and chemotherapy have been carried out by a number of graduate and undergraduate students under the direction of Dr. F. P. Gay, Professor of Pathology. The possibility of chemotherapy in the typhoid carrier condition in animals has been investigated by T. D. Beckwith, Assistant Professor of Experimental Pathology, a graduate and recent recipient of the doctor's degree. Professor Hall, in the University of Chicago, has continued extensive studies on the classification of anaerobic bacteria and has a number of articles in press on this subject. In addition to articles in process of publication, articles have appeared on the following subjects:

Barnes, W. H.—Classification of Streptococci Based on the Correlation of Results of Hemolytic Fermentative and Precipitin Tests.

Gay, F. P.—Germany and Immunology.

Stone, R. L.—The Dissemination and Destruction of Living Typhoid Bacilli Injected Intravenously in Normal and Immune Rabbits.

Gay, F. P.—The Mechanism of Bodily Resistance to Disease.

Gay, F. P., and Harris—Serum Reactions in Influenza.

Gay, F. P., and Stone, R. L.—Streptococcus Empyema.

Cooke, J. V.—Complement Fixation with Acid-Fast Bacteria.

Pediatrics.—The past year has been one of readjustment after the war. The arrangement under which Ward D was given up and Ward H used for teaching cases worked well during the first half-year. The financial situation in the hospital demanding retrenchment in taking in teaching cases and the limiting of teaching material during the second half-year limited the further success of the plan.

The Children's Out-Patient Department through the efforts of Dr. C. F. Gelston, Instructor in Pediatrics, was built up considerably, but has not returned to prewar attendance. Satisfactory service in the form of free medical supervision to the community has been rendered, however, and especially to the various charitable organizations such as the Associated Charities, the Nursery for Homeless Children, the Protestant Orphan Asylum, Sunshine Preventorium, Bothin Convalescent Home, and the Juvenile Court.

The work in the teaching of the third-year class in the second half of the year was satisfactory, although the department was handicapped for material. The ward work for the fourth-year class was not satisfactory because of the limited number of cases during the second semester.

During the last year an investigation has been started on the anemias and blood conditions in infancy and childhood. A study of over 1000 newborn infants has been completed. Various publications have been written by members of the department.

Physiology.—Progress has been made in the researches in which various members of the department have been interested during the past several years. This work was facilitated by a special addition to the budget during the academic year. There has been a reorganization of the department.

Surgery.—The members of the surgical staff have returned from war leave and have added new strength and zeal to the teaching. Two of the former staff members have received advanced appointments at other medical schools, Dr. L. C. Abbott as Assistant Professor of Surgery, Department of Orthopedics, University of Michigan, and Dr. E. C.

Chamberlain as Assistant Professor of Medicine, Department of Roentgenology at Stanford Medical School.

Spacious new quarters have been provided for the surgical clinic in the Out-Patient Department. During the past year the Department of Surgery has cared for 47 per cent of the total number of hospital cases inclusive of service and private patients. There has been a gradual curtailment of teaching beds—in 1918 there were fifty-nine, in 1919 forty-eight, and a threatened reduction for the coming year which, taken with the increase in number of students, limits the amount of important direct bedside teaching of Surgery in this hospital and decreases the value of the house staff positions. The one great need in the Department of Surgery is more teaching beds.

LOS ANGELES MEDICAL DEPARTMENT

LOS ANGELES, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit herewith the report of the Los Angeles Medical Department for the year 1919-20.

The return of many members of our staff from active service in the medical corps of the army has again permitted us to re-establish our work on its former basis and to place our clinics under better supervision than had existed during the war period.

The normal work of the institution has gone steadily forward and instruction has been given to a large number of men who have sought to increase their efficiency through graduate instruction.

During the last year a bequest of approximately \$7100 was received from the late Mrs. Della H. Leefin.

Attendance in the Graves Memorial Dispensary, which is the oldest dispensary in Los Angeles, has again resumed its prewar averages, and shows a steady increase. It is gratifying to know that the work of the clinicians and of the teachers has been faithful and efficient.

Respectfully submitted,

GEORGE H. KRESS,

Dean.

CALIFORNIA COLLEGE OF PHARMACY

SAN FRANCISCO, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit the following report of the College of Pharmacy for the year 1919-20:

The year following the great war was marked by an increase in membership of classes, notably so in regard to women in attendance. The graduating class numbers forty-one students. It is gratifying to observe that, although the state requires no collegiate training on the part of registered pharmacists, the number of matriculants is steadily increasing.

The Board of Directors has experienced a serious loss in the death of Mr. Val Schmidt and that of Mr. John H. Dawson. These directors have for many years faithfully given their services to the college.

It is gratifying to state that the library fund amounting to \$500 has been augmented by a gift of \$100 from Mr. Val Schmidt. It is the intention of the directors to rearrange the library. Books which have outlived their usefulness will be removed for new ones to be purchased.

Respectfully submitted,

FRANK T. GREEN,
Dean.

UNIVERSITY OF CALIFORNIA PRESS

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit the following report of the activities of the University Press for the year 1919-20:

As will be seen from the appended table, the University Press has issued during the year 7070 printed pages. This is somewhat less in amount than the output of 1918-19, but the falling off is directly attributable to the greatly increased costs of materials of all kinds and of labor. Nevertheless, in view of the great increase of necessary administrative printing, to publish all the manuscript approved by the Editorial Committee in an average year, such as this may be assumed to be, will require a larger force in the printing office or the letting of contracts for outside printing.

The following volumes have been issued in the Semicentennial Series:

G. P. Adams, *Idealism and the Modern Age* (published by the Yale University Press).

J. T. Allen, *The Greek Theatre of the Fifth Century before Christ*.

H. E. Bolton, *Kino's Historical Memoir of Pimeria Alta* (published by the Arthur H. Clark Company).

I. M. Linforth, *Solon the Athenian*.

Members of the staff of Lick Observatory, *Studies of the Nebulae*.

Members of the staff of the College of Agriculture and of the Scripps Institution for Biological Research, *Miscellaneous Studies in Agriculture, Biology and Oceanography*.

Josiah Royce (J. Loewenberg, editor), *Lectures on Modern Idealism* (published by the Yale University Press).

Mrs. Alice Stratton, editor, *Semicentenary of the University of California*.

The remaining five volumes of this series are in press and will be issued within the next few months. The distribution of the Semicentennial volumes has begun with the despatching of 110 sets to the leading institutions of learning in this country.

It is a pleasure to report that the receipts from sale of publications have advanced to \$10,570.10, a gain of about \$4000 over sales of the preceding year. Aside from the syllabus series, the principal sales of

our publications are made in the East, but we have been working under the handicap of distance and of consequent delays in delivery. As yet no steps have been taken toward establishing an adequate stock of our publications in any of the chief centers of the book trade, but it is hoped that arrangements can soon be made with the University Press Association or with some other house in New York to carry on consignment at least a small supply of our more important works.

In order to increase the value of our product and the demand for it, effort must be made that it may be better known. The Press is already endeavoring to secure more ample and more adequate reviews and is formulating plans for more effective advertising.

Papers in press at the present time amount to 9980 manuscript pages. To give this volume of work prompt publication will entail an increase in our resources as well as an increase in the force of the printing office. In the work of the present year but two contracts have been let for outside printing, and these contracts were made necessary by the nature of the papers which called for equipment not possessed by the University. The policy of printing in the University's plant is justified by the reduction in cost over that of work published elsewhere.

Save for the volumes in the Memoir Series and for a few of the Semicentennial volumes, the Press has hitherto published only such works as could be incorporated in its established series. The Editorial Committee has found, however, that members of the faculties often desire that works of scholarly character be given publication as independent volumes. It believes such publication to be entirely legitimate and desirable, in view of the undoubted stimulus that it will give to investigation. It is not the purpose to issue text books, to pay royalties, or to compete in any way with commercial houses.

Attention is respectfully called to the fact that sums expended on publication are virtually spent for two purposes: stimulation of research and the upbuilding of the University Library. While a statement of the money value of books received in exchange for our publications cannot be made, competent authorities estimate the value of such exchanges to us as greater than the cost of our scientific publications. In addition to these returns the standing of the University in the world at large is enhanced by publication of the worthy products of its members.

RECEIPTS FROM SALES OF PUBLICATIONS, 1919-1920

Agricultural Sciences.....	\$ 82.86	
American Archaeology and Ethnology.....	124.62	
Botany.....	183.24	
Classical Philology.....	33.35	
Economics.....	161.01	
Education.....	51.00	
Engineering.....	106.81	
Entomology.....	89.05	
Geography.....	6.81	
Geology.....	259.53	
Graeco-Roman Archaeology.....	35.45	
History.....	300.41	
Mathematics.....	10.75	
Memoirs.....	762.67	
Modern Philology.....	90.91	
Pathology.....	65.85	
Philosophy.....	16.57	
Physiology.....	55.92	
Psychology.....	41.81	
Seismographic Bulletin.....	.24	
Semicentennial Series.....	1,137.70	
Semitic Philology.....	34.97	
Zoology.....	195.32	
		\$3,846.85
University of California Chronicle.....	\$81.74	
Syllabuses.....	4,689.54	
		4,771.28
Lick Observatory Bulletins.....	\$6.50	
Lick Observatory Publications.....	59.90	
		66.40
Library Bulletins.....	\$5.85	
Publications of Academy of Pacific Coast History.....	38.34	
		44.19
University Calendar.....	\$63.25	
Administrative Bulletins (so far as sold through the Press).....	1,629.96	
Weinstock Lectures.....	161.06	
Debit Miscellaneous Publications.....	\$12.89	
		1,841.38
Total Sale of Publications.....		<u>\$10,570.10</u>

Respectfully submitted,

MORSE A. CARTWRIGHT,
Manager.OLIVER M. WASHBURN,
Acting Manager.

RESEARCH BOARD

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit the following report of the Research Board for the years 1918 to 1920.

The Research Committee of the University of California originated through an effort of the Editorial Board of the University to assist investigators who had completed important constructive work but lacked means for preparing the results for publication. The Editorial Board considered that its functions covered only the offering of opportunity to make results of research public, but recognized the need of a coördinate body to assist in securing opportunity to conduct investigations on significant problems outlined and initiated by members of the faculty.

In its first organization the Research Committee consisted of five members, of whom two were appointed by the President and three, the Dean of the Faculties, the Dean of the Graduate School, and the Chairman of the Editorial Committee, were *ex-officio*. The membership was later increased to seven, with the same *ex-officio* members. The committee was charged with consideration of the most urgent research needs of the faculty and was given a fund of \$2000 for assistance in work for which support was not available in regular departmental appropriations or through other means. In addition to its consideration of the necessities for assistance and equipment in the work of investigation, the committee made recommendations to the President regarding the delegation of members of the faculty to attend meetings of scientific and scholarly associations taking place at points remote from the University.

In the second year, the research fund for use of the Research Committee was raised to \$3000 and later it was increased to \$4000.

With the entrance of America into the war, the University proceeded at once to review the possibilities of each department and of each man for contributions toward meeting the nation's immediate needs. At a very early stage in the mobilization of science for assistance of the nation in war it seemed clear that with proper organization important contributions to urgently needed research application could be made by every University department, and grants from the committee were directed to this service during the war.

With the reorganization following the war, the Research Committee took up consideration of the constructive work in the University with renewed interest, and entered upon a study of the whole problem of the position of research in the University.

The committee recognized the extraordinary opportunity for investigators in the University to be of service to the community by solving problems concerned with the great questions of reconstruction. At the same time it was evident that the extraordinary influx of new students and the decrease in the value of the dollar would tend to reduce the available time of the investigator and to diminish the strength of his financial support. It was with these thoughts in mind that the committee transmitted to the Administrative Board of the University a memorial concerning the special needs for support of scholarly and constructive investigations.

In 1919-20 the Research Committee entered upon a study of the unrealized plans of the faculty for research in all fields touched by the University. As a result of this review there were received from the various departments requests for grants amounting to nearly \$60,000. These requests represented in some part work already under way, but were in a large measure projects for which hope had been maintained for years but without opportunity to see realization. In the view of the committee the plans proposed not only could be but would be carried out by the faculty if funds and assistance were available. It seemed also to the committee that such projects as those proposed, if carried out, would tend to make the University of California one of the great constructive research agents of the world.

After careful review of the numerous and significant projects for research presented, the committee approved the requests which are listed subsequently, and this program was in turn approved by the University administration.

In the course of the year the committee attempted to define its position in the University, to systematize its work by a thorough discussion of the place of research, and to make adequate plans for handling of such grants or other means of assistance as could be provided through the aid of this body. Although the subject might seem to have been settled by previous discussion the committee gave itself for several meetings to most careful consideration of the entire question of research in its relation to other functions of the University. Particular attention was given to the relation between research and teaching, and especially to the possibility of including in the membership of the faculty a certain percentage of instructors whose work might be given to teaching without relation to research. With unanimous voice the committee approved the view that the body of professors in the University should without exceptions base its educational work upon a relation to constructive effort and investigation.

It seemed to the committee desirable to formulate plans by which the grants for members of the faculty could be handled in such manner as to keep the committee informed regarding work accomplished. Arrangements were made by which the grants approved by the committee and the

President became special budgets in the Comptroller's office. All bills or expenditures against these budgets are now approved by the Chairman of the Research Board. The members of the faculty receiving grants are requested to make reports at the end of each year on the results of work done, in order that the committee may keep its contact with the work which it has planned to support.

The committee also gave consideration to methods by which the larger plans for research handled by individuals or departments could be considered in connection with the forming of the University budget for each year. It was proposed that the Research Board meet with the Committee on Budget each year to consider the research items of departmental budgets. As a result of this discussion arrangement was made by which the Research Board sat with the President, the Dean of the Faculties, and the Committee on Budget in planning for the University budget for departments for 1919-20. In this conference it was recommended that the larger sums which could appropriately be set aside for research in this way be allocated to the departments for administration, and that the funds set aside for use of the Research Board represent a mobile budget to be used in any direction for support of individuals, departments, or groups of departments, as may seem wise as the plans of the year develop.

The committee also took under consideration certain problems regarding coöperative researches which might be entered into jointly by the University and other organizations. Such for example are the plans of the Department of Mining, by which it has come into relation to the Federal Bureau of Mines, and there has been established on the campus a research station of the Federal Bureau which operates coöperatively with the Department of Mining to the large advantage of the University.

Other coöperative researches are represented by the group of problems under consideration by the Hooper Foundation for Medical Research through application of the fund of \$50,000 which has been set aside for its use by a California canners' association. The financial support thus made available to the University opens the way for extensive and significant investigation of immediate practical importance to the community and to industries. The University is, however, entirely free to make use through publication of all information secured, saving only that the parties concerned in the furnishing of funds have equal opportunity with other agencies to obtain any information representing the result of these studies. It was the view of the committee that such investigations should be encouraged, provided they do not place upon the University the burden of detailed investigations of limited use and available only to the agency furnishing support. In the judgment of the committee the University should enter upon no investigation for which the results are not open to the entire public.

Respectfully submitted

JOHN C. MERRIAM,
Chairman.

RESEARCH GRANTS, 1919-20

TRAVEL EXPENSE.

Leuschner, A. O. travel expense incident to journey from Cleveland to New Haven, Conn., in connection with attendance on meetings of National Academy	\$40.00
Calhoun, G. M., travel expense from Berkeley to Toronto and return incident to attendance on meeting of American Philological Association, in order to present for discussion a paper on the proceedings followed in commencing actions at law in the Athenian courts in the 4th and 5th centuries B.C.....	225.00

RESEARCH ON SPECIAL PROBLEMS FOR INVESTIGATION.

<i>Astronomy</i> : Leuschner, A. O. For services of computer on asteroid problems, in continuation of Grant No. 4, 1918-19	150.00
<i>Anatomy</i> : Evans, H. M., and Long, J. A. For investigation of relation between the organs of internal secretion and reproduction	250.00
Emmel, V. E. For comparative study of blood of certain amphibians for the purpose of obtaining data on the occurrence of peculiar elements in the blood of lower vertebrates	100.00
<i>Botany</i> : Goodspeed, T. H., and Clausen, R. E. For studies in variation in hybrids of tobacco plants	150.00
Jepson, W. L. For assistance in continuation of work on the flora of California	900.00
<i>Chemistry</i> : G. N. Lewis, Department of Chemistry and research fellows. For apparatus and assistance required in investigations on problems of low temperature	1,000.00
<i>Economics</i> : Daggett, Stuart. Assistance and clerical help in preparation of the history of the railroad lines now under the control of the Southern Pacific Company of Kentucky	150.00
<i>Geography</i> : Holway, R. S. For studies on the history of terraces in the Coast Range region between Pajaro Canyon and Santa Marguerita	150.00
<i>Geology</i> : Louderback, G. D. For studies in extensive collections of materials representing the geology of China	200.00
<i>Greek</i> : Allen, Jas. T. For assistance and clerical work in preparation of an index on fragments of Euripedes	150.00
<i>History</i> : Bolton, Herbert E. For editorial assistance in preparation of two volumes on western exploration	150.00
<i>Pathology</i> : Gay, F. P. For experimental studies on Streptococcus empyems	200.00
<i>Physiology</i> : Gesell, R. For studies on relation of electrical deflections to volume in flow of blood in sub-mallary gland	400.00
<i>Psychology</i> : Tolman, E. C. For study of inheritance of unusual ability in learning as exhibited in lower mammals	105.00
Stratton, G. M. Assistance in research on anger and pugnacity	150.00
<i>Zoology</i> : Kofoid, C. A. For assistance in connection with the preparation of a monograph on the Pelag protozoa of the eastern tropical Pacific	300.00
	<hr/>
	\$4,770.00

RESEARCH WORK APPROPRIATIONS, JUNE 30, 1919

Appropriation for 1918-19.....	\$4,000.00		
Brought forward from 1917-18.....	2,375.68	6,375.68	
Anatomy 8—P. E. Smith, Studies of endocrine organs.....	Appr. \$125.00	Expend. \$33.56	Balance \$91.44
*Anatomy 12—P. E. Smith, Studies on the glands of internal secretion.....	87.48	86.72	.76
Anatomy 12A—P. E. Smith, Traveling ex- penses to Boston and return.....	200.00	.....	200.00
Anthropology 3—A. L. Kroeber, Anthro- pological research by McKern.....	150.00	150.00	.....
Astronomy 4—A. O. Leuschner, Services of computer in research on the asteroid problem.....	150.00	.....	150.00
Biochemistry 5—E. O. Sundstroem, Studies on acclimatization.....	100.00	81.45	18.55
Botany 2—W. L. Jepson, Research on flora of California.....	900.00	897.20	2.80
*Botany 5—W. A. Setchell, Research on marine algae of Pac. Coast.....	76.20	.....	76.20
*Botany 19—W. A. Setchell, Research on marine algae of Pac. Coast.....	500.00	417.15	82.85
*Geology 2—G. D. Louderback, Invest. of manganese deposits.....	200.00	200.00	.....
History 1—R. F. Scholz, Researches on "A reconstruction of the Autobio- graphy of Augustus".....	50.00	50.00	.....
History 9—E. I. McCormac, Manuscript, etc., "Life of James K. Polk".....	200.00	155.18	44.82
History 11—C. E. Chapman, Typing and maps for "History of California".....	125.00	17.30	107.70
History 13—H. E. Bolton, Manuscript of "The Spanish Borderlands" and maps illustrating New Spain.....	225.00	200.00	25.00
*History 13—H. E. Bolton, Preparation of paper "California: the name".....	12.50	12.50	.....
History 15—C. E. Chapman, Preparation of bibliography of materials for history in California periodicals.....	250.00	.....	250.00
Lick Observatory 6—R. G. Aitken, Traveling expenses to Washington and return....	213.05	213.05	.....
Physics 7—E. P. Lewis, Research assistant in photoelectric properties of dielec- trics.....	200.00	200.00	.....
*Zoology 4—C. A. Kofoed, Monograph on "Dinoflagellates of California".....	133.50	.....	133.50
Zoology 10—J. F. Daniel, Studies on the possible hereditary influence of alcohol in mice.....	60.00	12.50	47.50
Zoology 14—S. J. Holmes, Bibliography of biological factors of human evolution	500.00	122.50	387.50
Not Appropriated.....	1,917.95	.....	1,917.95
	<u>\$6,375.68</u>	<u>\$2,839.11</u>	<u>\$3,536.57</u>

*These items were carried over from 1917-18 on June 30, 1918.

SCRIPPS INSTITUTION FOR BIOLOGICAL RESEARCH

LA. JOLLA, July 1, 1920.

To the President of the University.

SIR: I present herewith my report for the year July 1, 1919, to June 30, 1920.

OCEANOGRAPHY AND HYDROGRAPHY

Collections of water samples have been made daily throughout the year at the Hopkins Laboratory, Pacific Grove, Point Arguello, Summerland, and Hueneme, as well as at La Jolla, and on boat trips among the Channel Islands, and from Balboa, Panama, to San Diego.

This geographic extension of observations on the conditions of the sea, begun last year, becomes more important with increasing evidence of correlations between summer ocean temperatures and winter rainfall. Such a correlation has now been established for three consecutive seasons. This, taken in connection with other facts pointing in the same direction, goes far enough toward establishing a general rule to make continued and expanded study of the problem very promising. And the vast practical interest involved adds greatly to the reason for the investigation. The prediction, several months in advance, of either deficiency or excess of the ensuing winter's precipitation would be of incalculable value to California.

As a member of the committee of the National Research Council on Exploration of the Pacific, G. F. McEwen, Assistant Professor, Oceanographer and Curator of the Oceanographic Museum, spent December in the East conferring with oceanographers and meteorologists in the government service, with the result that the United States Coast and Geodetic Survey and the Weather Bureau are endeavoring to utilize the opportunities at the institution for the investigation of tides, currents, and weather.

During the year Professor McEwen and his assistant, N. W. Cummings, have entered a field of hydrographic investigation entirely new to the institution, that, namely, of evaporation from fresh water reservoirs in the vicinity of San Diego. Into this they were led, however, by their previous work on the evaporation of the sea at La Jolla.

The object of this extension of their activities is to formulate mathematically certain problems of temperature and evaporation common to

ocean, lakes, and reservoirs, and then to find solutions for these problems. The hope is entertained that these efforts may be preliminary to an extensive series of evaporation investigations on the reservoirs of San Diego County's water systems, and be useful in dealing with the perennial "water question" of California, as well as in interpreting the general results of oceanographic observations.

This department has also collaborated with members of the Citrus Experiment Station at Riverside and with the Farm Bureau Advisor of San Diego in working out certain mathematical formulae involved in the study of plant growth and other problems of the citrus and farming industries of Southern California.

The great amount of work involved in the specific gravity, calorimetric and temperature observations on the sea, and in meteorology, has fallen largely to Mr. Cummings, and strongly emphasizes the importance of clerical assistance in the institution's programme work.

PLANKTOLOGY

Investigations in this department have been continued by E. L. Michael, Zoologist and Administration Assistant, W. E. Allen, Biologist, C. O. Esterly, Zoologist, and Mrs. C. Essenberg, Zoologist and Librarian, for whose laboratories quantitative collections have been made at various points along the coast, where the upwelling of water is known to be greatest, as well as at La Jolla. From these investigations it is becoming highly probable that there is a relation between the quantity of plankton and the temperature of the water as dependent upon the phenomenon of upwelling now known to be an important feature in the oceanography of this region.

As indicated particularly by Mr. Michael's statistical studies, the rule is that the plankton (more exactly the phytoplankton) increases geometrically with the arithmetic decrease of the temperature of the water as dependent upon upwelling.

For the fuller elucidation of the extremely complex relations here presented, employment of collecting methods of the greatest possible trustworthiness is indispensable.

To this Mr. Allen has devoted much of his efforts during the first year of his full time connection with the institution. By discarding the drag net method of collecting phytoplankton and substituting therefor the use of a bucket of more than fifty liters capacity, the dipped-up contents of which are filtered, he has succeeded in greatly reducing the error that has heretofore seriously impaired quantitative plankton investigations. He has also subjected the microscopic procedure in estimating the quantity of phytoplankton in the laboratory samples to searching revision. With reference to these methods Mr. Allen writes: "After nine months of daily experience under the new procedure, I feel

confident that our collecting methods are not only statistically reliable but also relatively inexpensive and conducive to great continuity, and that laboratory manipulation has been acceptably stabilized by recent standardization of its details.”

Although, as would be anticipated from the greater complexity of the zoo- than the phytoplankton, the institution's methods of dealing with the latter are more adequate than are those of dealing with the former, progress in the zooplankton part of the programme is also more substantial now than ever before.

Dr. Esterly's entire research time, with an assistant, has been devoted to the quantitative examination of the copepod collections, seventy per week, sent to his laboratory at Occidental College from the institution.

It should also be mentioned that Dr. Ida Hyde as a volunteer investigator has been working most of the year on copepods, her studies being partly experimental and partly statistical. Her results up to date are confirmatory of those reached by Dr. Esterly, in so far as they indicate the impossibility of arriving at trustworthy conclusions about the behavior of the animals in nature from laboratory experiments on the same species. And this is the more significant in that Dr. Hyde's studies have been planned and carried out quite independently of Esterly's.

Dr. Essenberg's work on the Appendicularians has now reached a point where the taxonomy of the group represented in these waters is sufficiently advanced to enable her to begin dealing systematically with the influence of environic condition on the occurrence of the species.

Significant as to the importance of the methods being developed at the institution for handling statistics of the sort involved in the planktonic-environic researches being carried on here are the demands for a paper on the subject published during the year under the joint authorship of Michael and McEwen. This paper, printed in the *Proceedings of the American Academy of Arts and Sciences*, has the title “The functional relation of one variable to each of a number of correlated variables determined by a method of successive approximation to group averages: A contribution to statistical methods.”

The variety of sources from which the many requests for this publication come is particularly noteworthy. They include industrial, medical, social, agricultural, psychological and several other kinds of laboratories.

Through the courtesy of Mr. E. W. Scripps, two members of the institution staff, Messrs. Michael and Crandall, were sent on a collecting trip aboard the yacht “Kemah,” the voyage beginning at Jacksonville, Florida, and continuing via the Bahamas, Jamaica, and the Panama Canal to San Diego, California. Quantitative biological phytoplankton hauls were made hourly during the entire period that the boat was under way; and shore collections also were made at various points in the Bahamas and along the western coast of Central America.

HEREDITY AND ENVIRONMENTAL INFLUENCE

The work of this department has been somewhat curtailed during the last year by the absence of F. B. Sumner, Associate Professor and Biologist, from the institution from August to December inclusive. This period he spent at the University giving courses in the Department of Zoology on Heredity and Evolution and Animal Behavior; and by the resignation of H. H. Collins. Mr. Collins completed his work for the doctor's degree during the summer of 1919, and accepted a position as a teacher of biology.

Breeding experiments, particularly in relation to certain mutant characters in mice, were continued and extensive measurements and statistical studies on race hybrids were made.

A long series of femurs were weighed for testing the possible inheritance of bilateral asymmetry. The results thus far obtained are negative. Slight differences between the right and left sides of the body are not hereditary, according to these results.

Two field trips were made by Dr. Sumner during the spring of 1920 for collecting mice in certain localities offering problems of special biological interest. The expenses of these trips were defrayed from a special fund donated by Mr. E. W. Scripps. The first of these was in company with Professor C. J. Herrick of the University of Chicago to a region in the valley of the Colorado River, about fifteen miles north of Yuma. The second trip was made in company with Professor Joseph Grinnell, Director of the Museum of Vertebrate Zoology, and later with Mr. Richard Hunt, also of the museum staff. This trip comprised visits to a number of desert regions in Southern California. The longest stops were made in Death Valley and in a conspicuous area of black lava, occurring in the Mojave Desert. The latter point was visited in order to test the alleged effects of dark surroundings in increasing the pigmentation of mammals.

Dr. Sumner has been active during the year as a member of the "Committee on the Preservation of Natural Conditions" of the Ecological Society of America.

Mr. R. R. Huestis joined the institution staff on May 1, 1920, as scientific assistant in genetics, his work being with Dr. Sumner.

EXPLORATION OF THE NORTH PACIFIC

The practical importance of carrying out the Pacific exploration idea, referred to in my last annual report, has been particularly emphasized by two circumstances during the last year: (1) The main fishing industries of the entire Pacific coast (salmon, herring, sardine, tuna, whale) have tended to force attention more than ever to the problems of abundance

and conservation of the ocean's resources in this field. (2) Another winter of deficient precipitation in California, following another summer of excess temperature of the sea, has increased interest in the problem of seasonal weather forecasting on the basis of observations on the conditions of the sea.

Although the merest reference to the general subject of Pacific Exploration can be made here, this must include mention of the magnitude and complexity of the suggested explorations. As insisted in other connections, so extensive are the problems and undertakings involved that it seems hardly possible that any agency less than the national government can be adequate to their prosecution.

The U. S. Navy, the Coast and Geodetic Survey, and the U. S. Weather Bureau seem to be natural government agencies to which to look for portions of the programme which are beyond the ability of local agencies.

But efforts are being made to correlate all projects and agencies, national, state, and private, that are occupied with researches in the Pacific.

With this end in view, a Pacific Exploration Committee of the National Research Council has been formed for the purpose of setting forth the problems now being investigated, formulating others which are in immediate need of investigation, and pointing out what would be necessary to carry through these researches and the possible agencies for doing this.

The present personnel of this committee is: J. C. Merriam, Professor of Palaeontology and Historical Geology, University of California, chairman; William Bowie, U. S. Coast and Geodetic Survey; R. A. Daly, Harvard University; William M. Davis, Harvard University; B. W. Evermann, California Academy of Sciences; H. E. Gregory, Yale University and the Bishop Museum, Honolulu; E. B. Mathews, U. S. Geological Survey; A. G. Mayer, Carnegie Institution, Washington; George F. McEwen, Scripps Institution, University of California; and W. E. Ritter, Professor of Zoology and Scientific Director of the Scripps Institution, University of California.

Messrs. McEwen and Ritter have been active in the work of this committee, both having attended all meetings held, one of these being in New York City on December 7, 1919.

The addresses given at the Symposium on the Exploration of the North Pacific, held at Pasadena on June 19, 1919, in connection with the meeting of the Pacific Division, A. A. A. S., have been published as Bulletin 9 of the Scripps Institution. These addresses were by William E. Ritter, Barton W. Evermann, John N. Cobb, Ellis L. Michael, George F. McEwen, Edward A. Beals, and George D. Louderback.

LIBRARY AND PUBLICATIONS

Five hundred and eighty-five new books have been added to the library during the year, and the periodical list has been increased to eighty-five. Such a growth would be quite impossible except for the special gifts of money for this purpose made by Mr. E. W. Scripps. And the broadly representative character of this growth is also partly due to the wide range of his interests in science.

Attention should be called to the fact that the tendency of the institution's development appears to make an increasing proportion of its scientific papers unsuitable for the zoology series of the University of California Publications, which series is regarded as the regular medium of publication for the technical writings of the staff. This is particularly true as to the work in oceanography and the more technical application of statistics to various problems. But even in genetics, which subject ought, on its animal side, be regarded as strictly zoological, Dr. Sumner has not felt the University Publications to be suitable for his papers.

MUSEUM, AQUARIUM, AND SUPPLY DEPARTMENT

The following valuable gifts to the Museum which I wish hereby to acknowledge have been made during the year: A comprehensive collection of local sea weeds by Mrs. M. S. Snyder of La Jolla; a partial collection of water and shore birds of the Southwest by Mr. Frank Stephens of the San Diego Natural History Society; and an important addition of Pacific Coast shells which is yet to be received from Dr. Fred Baker and Mr. F. W. Kelsey of San Diego. All of these will be placed in the new cases that have recently been installed.

What has probably added most to the educational efforts of the institution during the year has been the service of an efficient guide, Mr. C. H. Michael, who has explained the various exhibits of the Museum and Aquarium to more than 12,000 visitors.

Although there can be no question about the value of the Aquarium as a means of public education and pleasure, the expense and labor involved in maintaining it at a proper standard are so considerable as to raise a real question about what course to pursue relative to it. Several alternatives are under consideration.

The Supply Department for biological materials, which was more or less inactive during the war, is now reopened and is filling orders from various supply houses, university departments, and individual research workers. It is hoped that this department will soon develop into a self-supporting and, perhaps, fairly remunerative business. Mr. P. S. Barnhart, in charge of this department, is well qualified to make it a success.

PROPERTY REPAIRS

Several longitudinal cracks which have appeared in the concrete piling of the institution pier are causing some concern. Mr. Ledbetter of Ledbetter & Co., contractors, of Los Angeles, has examined them, and Mr. Crandall has made a careful study of other similar piers in Southern California, but at present no definite solution has been reached for stopping this deterioration. This matter is very important since it concerns the future usefulness of the pier. Steps will be taken to repair the damage as far as possible.

The woodwork of the pier and all of the buildings belonging to the institution have been repainted and, where necessary, refitted, the expense being borne by Miss Ellen B. Scripps.

The roof of the laboratory building is in bad condition and is obviously deteriorating quite rapidly. Past efforts to make it rainproof seem to show that nothing short of a new covering of different type for the entire building will cure the trouble.

Attention is also called to the great need of improvement of the roads, walks, and grounds generally.

A "CHAUTAUQUA IN SCIENCE"

The Scripps Institution in conjunction with the Community Center of the Unitarian Church of San Diego was enabled, by the generosity of Mr. and Mrs. William Templeton Johnson and Mr. E. W. Scripps to present in San Diego and La Jolla last summer the following course of lectures:

"To what extent can Science be applied to Human Relationships," by Dr. William E. Ritter, Scripps Institution for Biological Research.

"The Economist's View of Humanitarianism," by Dr. Jessica B. Peixotto, Department of Economics, University of California.

"The Conflict of Pragmatism and Knowledge," by Dr. Warner Fite, Department of Philosophy, Princeton University.

"The Psychology of Discontent," by Adolph Meyer, Director Henry Phipps Psychiatric Clinic, Johns Hopkins University.

"The Evolution of Types of Civilization," by Dr. Edgar L. Hewitt, Director San Diego Museum and School of American Research.

"Main Characteristics of the Humanitarian Movement During the Past Century," by Dr. Jessica B. Peixotto.

"The Relation of Science to Religion," by Dr. Warner Fite.

"The Present Status of Humanitarianism," by Dr. Jessica Peixotto.

"Freedom and Solidarity," by Dr. Adolph Meyer.

This enterprise had the double purpose of bringing together specialists in different fields of knowledge for a series of more or less technical

discussions at the institution, and giving to popular audiences in San Diego the addresses indicated above.

So satisfactory was the experiment that a similar programme will be carried out during the summer of 1920.

VISITING INVESTIGATORS

The following have used the facilities of the institution during the year in prosecution of their special researches: Professor G. H. Parker of Harvard University, working on the reactions of *Renilla*; Dr. Ida Hyde on the influence of magnetism on certain littoral animals and on the activities of two species of copepods in relation to environmental conditions; Dr. Myrtle Johnson and Mr. H. J. Snook in the preparation of a handbook of the marine fauna of the Pacific Coast; Dr. C. Judson Herrick, assisted by Mr. E. R. Gaderer, University of Chicago, on histological studies of the nervous system of invertebrates; Miss Sally Hughes on the cranial nerves of the shark, *Galeus*; and Professor S. S. Maxwell, University of California, on the labyrinth of sharks.

SPECIAL GIFTS BY MR. E. W. SCRIPPS

Record should here be made of the special contributions to the work of the institution made during the year by Mr. Scripps. The purposes and amounts of these are as follows:

Stenographic work	\$1,500
Assistant in Oceanography (Mr. Cummings)	1,200
Library—books	1,800
Publication funds	2,000
Assistance in Genetics	1,500
Field work in Genetics and Ecology	1,150
Scientific cruise of the "Kemah"	2,500
	<hr/>
	\$11,650

THE SCIENCE NEWS SERVICE

During the year this project which, though wholly independent of the institution as to organization, funds and field of work, has been brought into partial existence, and implicates the institution rather closely because of the part being taken in it by the Director, and from the further fact that for the present the headquarters of the service must be at the institution.

For details concerning the nature of this project reference must be made to the records of the organization itself. Only the most essential facts concerning it need be given here.

The purpose of the undertaking as stated by its proposer and financial backer, Mr. E. W. Scripps, in a revised memorandum of March, 1920, is to promote the dissemination of science in the community at large by

any means whatever that in the judgment of the organization may appear wise and practicable. For the present effort will probably be restricted to the newspapers.

At present the organization of the service consists of one representative each of the National Academy of Sciences, the American Association for the Advancement of Science, and the National Research Council, these representatives being, respectively, Director George E. Hale, Mount Wilson Solar Observatory, Pasadena, California; Director D. T. MacDougal, Desert Laboratory, Tucson, Arizona; and Professor A. A. Noyes, California Institute of Technology, Pasadena, California; and also of Mr. E. W. Scripps, Mr. Robert P. Scripps, and Director William E. Ritter, Scripps Institution.

A considerable sum of money has been placed at the disposal of the organization to aid its still farther development and make experiments in getting popularized scientific matter from scientific men and in selling this to the papers. In furtherance of the undertaking conferences among scientific and newspaper men have been held at many of the chief centers of scientific work throughout the United States. In connection with these conferences the Director has made two journeys across the continent since November, 1919.

An enterprise of undoubtedly great potential good is here in process of formation, but the full realization of this will require much effort and many months or even years of time.

It should be pointed out, in concluding this statement about the Science News Service, that although this undertaking is wholly independent, organically, of the institution, its kinship to certain fundamental ideas of the institution is indicated by the fact that a number of more or less definite efforts have been made by the institution itself in past years to disseminate the results of its researches through the public press. The last and most positive effort of this sort has been made during the past year. This has consisted in the appointment of Mr. W. E. Allen to be "publicity secretary," as well as biologist, of the institution, he having had considerable experience before joining the institution staff in writing popular science articles for the newspapers.

The year's efforts by Mr. Allen in this field furnish experience and information that will be distinctly serviceable to the new and larger undertaking. But if the new venture succeeds, the definitive institution experiment will probably be discontinued.

Respectfully submitted,

WILLIAM E. RITTER,

Director.

SOUTHERN BRANCH

LOS ANGELES, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit my report on the Southern Branch of the University of California.

The legislative act which converted the Los Angeles State Normal School into a part of the University took effect July 24, 1920. On that date the Trustees of the Normal School transferred its buildings and grounds and equipment to the Board of Regents of the University of California. They forthwith named the new institution The Southern Branch of the University of California, appointed the undersigned Director and, in accordance with a recommendation by President Benj. Ide Wheeler, created an Advisory Administrative Board, composed of Dean Monroe E. Deutsch, Professor B. M. Woods, and Assistant Comptroller Robert G. Sproul, to assist the Director and advise the President and the Regents concerning the management of the institution.

The state law which brought about this affiliation authorized the Regents to provide here "such freshmen and sophomore courses of university grade as they may from time to time deem proper;" and directed that courses should be given "designed to prepare students for the profession of public instruction in the kindergartens, elementary and intermediate schools of California . . . courses leading to special high school certificates shall also be given. . . ." Inasmuch as the legislature was able to make but a limited appropriation for the new work to be given here, it empowered the Regents of the University "to limit the total enrollment of students in said branch of the University during the said fiscal years, in order that the financial provisions of this act may be sufficient to supply the usual university grade of education." The Regents accordingly limited the enrollment for the year 1919-20 to 250 freshmen students in the junior college classes and 1000 students in the courses for teachers. In addition, a third group of students has been in attendance throughout the year. It is made up of ex-service men, wounded and invalided soldiers, who are sent for reëducation by the Federal Board for Vocational Education. The Normal School was providing instruction for a group of these men at the time of its transfer to the University. The Administrative Board voted to continue that work. The Federal Board has gradually increased its classes here until at present 175 men and one woman are enrolled.

Since the date of the transfer made it impossible to fit the three term arrangement which the Normal School had followed to the semester plan of the University, it was voted to continue the three term plan for the

first year. Instruction, therefore, began on September 15 and closed on June 18.

The first concern of the Director and the Administrative Board was naturally that of providing a staff of instructors. Inasmuch as the courses for teachers were to be continued, the Director recommended the reappointment of the teachers who had given them, and that they be graded and classified according to the University's practice, as instructors, assistant professors, associate professors, and professors in keeping with university standards. President Wheeler approved the salary roll as submitted, on two condition: First, that all appointments to the faculty of the Southern Branch terminate on June 30, 1920. Second, "that the Administrative Board shall review the salary roll and shall be prepared to make to the Director, by January 1, 1920, a report regarding the personnel and salaries of the teaching staff, this report to be the basis of the Director's report to the Regents, through the President of the University."

These instructions were carried out, the Administrative Board's report forming the basis of the budget and salary roll which the Director submitted to the President on March 9, 1920. The following instructors devoted themselves primarily to the work of the junior college: John Mead Adams, Associate Professor of Physics; Frederick E. Beckman, Assistant Professor of French and Spanish; Ford A. Carpenter, Lecturer in Meteorology; Frederick W. Cozens, Assistant Professor of Physical Education; W. R. Crowell, Assistant Professor of Chemistry; Herbert F. Allen, Assistant Professor of English; G. E. F. Sherwood, Associate Professor of Mathematics; A. P. McKinley, Assistant Professor of Latin.

One of the chief concerns was to bring about a measure of student self-government from the first. As we were beginning things anew and as we had the great example of Berkeley to stimulate us, we thought we ought to do this thing, but we realized at the same time that we lacked the very agency which has made student government at Berkeley the notable success that it is; namely, a senior class. Our students are younger, most of them just out of high school. They lack that steadiness which the older and more experienced seniors of Berkeley have. Nevertheless the students were eager for it and we resolved to try the experiment. It has had its ups and downs, to be sure, and falls far short of perfection, but on the whole its results have exceeded our fondest hopes. The student body has unified itself; it has formulated its own constitution, elected its own officers and managed its own affairs with notable success. One factor which has contributed as much as any to this outcome has been the willingness of the faculty to allow the students to take charge of their own affairs. A school where rules were rather numerous and formal all of a sudden made itself into a school without formal regulations of any kind save the very compelling one that nobility obliges. The faculty at its last meeting bore witness to the success of our experiment

by voting "to commend the spirit, aim, and general success of the student government movement in this institution." Next year we shall have traditions and a machinery for enforcing them. We feel that the success of this year without these things is truly noteworthy, and with a continuance of the good spirit of enthusiasm and coöperation which our students have shown we should go forward to a splendid development of student life here.

In one respect we have been greatly disappointed. We had hoped for a Reserve Officers' Training Corps, but the War Department was unable to grant our request. Next year we are assured our request can be granted.

In the field of studies we have to report measurable success. Officers from other colleges have complained to us that their students this year lack enthusiasm for their work and seem to suffer from that general war weariness and dislocation of interest which is common throughout the world. As far as we can determine, our students show no signs of such distraction. They do their work, keep their engagements, seem to be contented and are, on the whole, a most satisfactory body of young people.

The atheletic life of the school has had a vigorous and satisfactory growth, for which Professor Cozens is responsible. A football team, a baseball team, a winning basketball team, a track team, and a large group of contestants in the boxing tryouts are the results of his labors. Almost all the men of the school have offered themselves for some form of athletic activity. Their zeal has been most gratifying. The women students, too, have shown a vigorous interest in physical training. They have organized a Woman's Athletic Association which has set out to enroll every woman here in an athletic team of some sort.

John Brewer, Associate Professor of Education, received a call from Harvard University at the beginning of the school year and resigned to take up work there. M. L. Darsie, Assistant Professor of Education, arranged to take over a part of the work thus left unprovided and, by distributing the rest to others, we have been able to take care of it without filling this vacancy in our staff.

Dr. Jesse F. Millspaugh, formerly President of the Los Angeles State Normal School and Dean of the Southern Branch of the University of California, died on December 12, 1919. He was the planner and designer of the new Normal School which the University took over. He was the friend and adviser of all the students here and one of the best known and most valued of the educators of America. In his death the University loses a faithful and devoted servant and the State a worthy and efficient citizen. An assembly to remember Dr. Millspaugh was held by students, teachers and citizens at the school on January 30. Dr. Millspaugh's work was taken over by Professor Marvin, to whom your office assigned the title of Assistant Director.

Respectfully submitted,

ERNEST C. MOORE,
Director.

SUMMER SESSIONS

BERKELEY, July 1, 1920.

To the President of the University.

SIR: In the Summer Session of 1919 the total enrollment, not including the Summer School of Surveying, was 3312. Sixteen hundred and sixty-seven were teachers; of them 1138 came from California, 502 from other states, and twenty-seven from foreign countries.

It does not appear that the continued decrease in enrollment was due to the increase of the tuition fee from \$15 to \$20 or to the growth of our own Summer Session in Los Angeles, since there was no appreciable falling off in attendance from the southern part of the state. The decrease was apparently due rather to general after-the-war conditions: the cost and discomfort of travel had increased; many students were still in government service; many teachers were still similarly occupied, or had permanently left the profession for other activities, or were obliged to give the summer to vacations or to making up for time lost through the influenza epidemic of the preceding winter. The decrease of about 12 per cent followed, as commonly happens in California, a decrease of the same relative amount in the eastern summer sessions of the preceding year.

"Americanization" was the characteristic theme of the session. A number of courses bearing directly or indirectly upon it were grouped about courses in Civics and the Teaching of English to Foreigners. The special announcement describing this curriculum attracted widespread attention and was not without influence in later developments in this field.

In the Summer Session in Los Angeles the enrollment was 906, a gain of about 40 per cent over the preceding year. This session had thoroughly established itself and had become favorably known through the success achieved the preceding year; it was made more accessible by removal from the Los Angeles High School to the buildings of the State Normal School, now the Southern Branch of the University of California. The opportunity to study at the University without leaving home was gladly seized by many teachers of Los Angeles and its neighborhood. As in Berkeley, the special theme of the session was "Americanization."

The brevity of the 1919 vacation, resulting from the return to the old calendar from the "quarter system," precluded the possibility of

any special term or second term as in 1917 and 1918. For the year 1920, however, the Regents voted to try the experiment of an "Intersession" to be conducted during the six weeks, May 10 (two days before Commencement) to June 19 (two days before the opening of the Summer Session). The purpose of the Intersession was to enable students of the University, and particularly graduate students, to continue their work throughout the summer, securing thereby credit for a semester's residence and for twelve units of work. It was planned also to offer required lower division courses in a number of the larger departments, thus relieving somewhat, without cost to the University, the pressure upon such courses during the regular sessions. Since California schools, and, indeed, all other institutions of learning, are in session at this time, it was expected that faculty and student body alike would consist wholly of normal members of the University. The plan was successfully put into operation. There was an enrollment of 1005 students. Of these 140 were graduate students; seventy-eight were enrolled in the twenty-four graduate seminars; a considerable number signified their intention of continuing the work through the following six weeks of the Summer Session. Instructors generally expressed their satisfaction in the amount and quality of the work done by the students.

It is possible that the unexpectedly large enrollment was due to temporary conditions. Nevertheless, it is obvious that the experiment should be repeated. The character of the student body and the conditions of student life are not dissimilar to those of the Summer Sessions; twelve weeks devoted primarily to study and research may well become an influence for great good in the University.

Respectfully submitted,

WALTER MORRIS HART,
Dean.

DEAN OF THE UNDERGRADUATE DIVISION

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to submit herewith a report on the work of the office of the Dean of the Undergraduate Division for the year ending June 30, 1920.

Beginning July 1, 1919, the title of this deanship was changed. It had formerly been the Dean of the Lower Division. The purpose of this change of title was to indicate more closely the scope of the work undertaken by this office. As the name implies, it was originally intended that the Dean of the Lower Division should have general supervision over the work of the first two years in so far as general matters were concerned which affected the admission of students, their living conditions and the administration of requirements, irrespective of the particular college in which the students might be enrolled. In later years many of these matters, and others that were added to this office, came to affect the entire undergraduate body. It was, therefore, believed advisable by the administration to indicate this fact by a more appropriate title for the office.

During the last year no Dean of the College of Letters and Science was appointed. The work of that office was, therefore, added to the duties of the Dean of the Undergraduate Division, who was given the additional title of Acting Dean of the College of Letters and Science. In consequence of the great increase of the number of students registered in this college and the great number of adjustments of schedules necessary on account of men returning from military service, these duties occupied a large portion of the work. The adjustments will become fewer as time goes on, but will necessarily continue for some years to come.

Departing from a free-elective basis, the College of Letters and Science during the last year has adopted new junior certificate and degree requirements which will become operative in August, 1920. With respect to students now in attendance, further adjustments will be necessary until the body of students now registered in that college come wholly under the new plan.

The administration of the disqualification rule has fallen primarily upon this office. During the year the Senate rule governing disqualification

has been changed. It is now necessary to pass in ten units each semester in order to remain in the University, or to have a thoroughly satisfactory record in at least eight units. The administration of the rule in this new form will require more attention in that it affects a larger number of students, and those, with respect to whom a remission of these requirements should be made in the interests of equity and justice, will necessarily be larger. However, it is felt that this strengthening of the requirement will work for higher standards, and will tend to eliminate more of the inefficient and the negligent. At the end of the semester, May, 1920, 387 students were disqualified under this rule, whereas had the old rule been in operation 265 would have been eliminated.

The housing problem at the University becomes more acute each year. The congestion in the vicinity of the campus, and indeed in the entire region from which students may come daily to attend the University, will increase until economic conditions adjust themselves so that building operations may proceed normally. A sufficient endowment to provide dormitories for at least one thousand students would greatly relieve the situation and make it unnecessary for many to live long distances from the University, or in unsatisfactory accommodations nearby.

Respectfully submitted,

T. M. PUTNAM,

Dean of the Undergraduate Division.

SCHOLASTIC STANDING OF FRATERNITIES AND CLUBS—Numbers Indicate Rank According to Average Grade

Name of Organization	Jan.- May 1912	Aug.- Dec. 1912	Jan.- May 1913	Aug.- Dec. 1913	Jan.- May 1914	Aug.- Dec. 1914	Jan.- May 1915	Aug.- Dec. 1915	Jan.- May 1916	Aug.- Dec. 1916	Jan.- May 1917	Aug.- Dec. 1917	Jan.- May 1918	Aug.- Dec. 1918	Jan.- May 1919	Aug.- Dec. 1919	Jan.- May 1920
Abracadabra.....	9	15	7	25	2	21	18	12	16	15	N	2	N	N	11	29	42
Aceacia.....	35	29	20	13	32	36	26	Supplm 36	22	40	O	7	O	O	10a	22	38
Achaean.....	...	17	11	3	5	10	13	...	13	22	R	...	R	R	...	7	4
Al Ikhwani.....	7	19	12	9	7	8	21	19	5	2	E	...	E	E	5	3	5
Alpha Delta Phi.....	1	2	4	16	10	...	...	1	1	1	F	...	F	F	1	1	1
Alpha Kappa Lambda.....	3	16	27	4	27	2	10	26	25	29	C	15	C	C	4	11	32
Alpha Sigma Phi.....	18	23	42	36	31	23	16	25	40	11	O	41	O	O	19	33	39
Alpha Tau Omega.....	33	43	36	33	22	41	38	41	8	30	R	38	R	R	33	34	29
Bachelordon.....	23	21	25	5	3	5	3	15	42	4	D	39	D	D	14	38	40
Beta Theta Pi.....	37	24	26	35	40	26	2	24	24	21	...	16	...	...	30	32	30
Chi Phi.....	22	18	16	6	8	4	24	9	17	8	—	32	—	—	8	17	24
Dahlonega.....	8	26	9	7	26	4	12	7	11	18	W	24	—	—	15	10	8
Del Rey.....	20	6	10	18	33	33	40	34	39	37	A	14	A	A	18	27	23
Delta Chi.....	27	25	34	24	30	40	14	17	23	27	R	4	R	R	25	41	22
Delta Kappa Epsilon.....	38	36	38	43	30	19	42	40	41	42	...	4	...	...	28	43	41
Delta Sigma Phi.....	27	3	22	11	6	30	19	33	36	39	A	42	A	A	24	45	27
Delta Tau Delta.....	15	31	19	31	28	15	15	20	14	19	E	29	E	E	36	13	43
Delta Upsilon.....	6	13	35	26	24	12	23	16	27	31	M	35	...	...	7	24	16
Dwight.....	14	7	8	2	1	17	29	30	26	34	...	...	...	...	...	...	35
Enigma.....	...	22	1	2	38	...	...	...	...	...	...	...	...	...	...	...	...
Kappa Alpha.....	39	35	30	32	16	38	37	21	37	9	E	20	E	E	17	28	21
Kappa Sigma.....	28	33	29	21	14	13	36	8	7	6	R	12	R	R	23	35	28
Lambda Chi Alpha.....	21	5	2	8	14	9	1	3	18	36	E	10	E	E	16	9	25
Nalanda.....	32	34	43	37	44	...	...	...	...	...	N	...	N	N	...	8	6
Orond.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phi Delta Theta.....	17	12	24	15	37	22	20	10	...	12	...	9	...	...	35	39	17
Phi Gamma Delta.....	31	42	40	39	29	37	31	28	15	14	...	37	...	...	37	25	13
Phi Kappa Psi.....	26	28	33	14	18	6	8	27	29	7	...	6	...	...	20	23	19
Phi Kappa Sigma.....	19	20	5	12	12	6	7	5	10	5	...	3	...	...	6	4	14
Phi Sigma Kappa.....	24	27	21	29	34	3	33	32	30	38	...	27	...	...	10	16	33
Pi Kappa Alpha.....	2	4	3	10	9	3	4	13	4	10	...	34	...	...	3	6	2
Pi Kappa Phi.....	10	...	...	...	...	...	32	31	20	43	...	...	...	...	...	21	10
Psi Upsilon.....	11	14	23	...	19	31	5	42	6	25	...	17	...	...	38	5	12
Sigma Alpha Epsilon.....	11	38	37	41	41	29	41	39	34	41	...	31	...	...	34	40	40
Sigma Chi.....	34	39	41	38	34	25	34	42	34	41	...	31	...	...	26	30	20
Sigma Nu.....	42	41	31	22	25	32	35	4	12	33	...	19	...	...	21	42	45
Sigma Phi.....	36	11	15	27	20	7	11	29	9	13	...	13	...	...	2	18	37
Sigma Phi Epsilon.....	29	30	13	34	35	28	25	18	31	20	...	26	...	...	29	14	18
Sigma Phi Sigma.....	16	1	6	23	17	1	9	14	21	32	...	11	...	...	39	31	31
Sigma Pi.....	12	8	18	1	11	1	22	2	2	16	...	23	...	...	27	36	7
Tau Kappa Epsilon.....	...	...	...	...	...	...	30	38	38	28	...	...	...	...	13	37	11
Theta Chi.....	30	9	28	42	39	39	39	37	32	17	...	33	...	...	31	44	44
Theta Delta Chi.....	5	10	14	30	15	14	6	22	28	24	...	8	...	...	32	20	36
Theta Xi.....	13	...	32	17	15	20	27	11	33	23	...	...	...	...	12	26	26

WILMERDING SCHOOL OF INDUSTRIAL ARTS

SAN FRANCISCO, July 1, 1920.

To the President of the University.

SIR: On December 31, 1919, the Wilmerding School completed the twentieth year of its work. When it began operations, in January, 1900, its curriculum was centralized in the teaching of the building trades. A block of land adjacent to the Lick School was chosen as a site for the Wilmerding School in order that the two endowments might cooperate. The Lick School retained the machinery trades and continued to offer instruction of a grade sufficient to prepare students for engineering courses in college; the Wilmerding School took over the building trades previously offered at the Lick School, added other trades in the same field, and maintained a grade of instruction based on the actual needs of prospective mechanics.

Under this arrangement the Wilmerding School set out on a unique and important experiment in industrial education, viz., the teaching of the building trades—not to the exceptional boy, but to the average, normal American boy, as an integral part of his general education and preparation for life. Later on, in order that an ample mount of work of a very practical sort might be provided under conditions that would appeal to the boy, and in order that this experiment might not be hampered by objections from labor unions—whose attitude towards industrial education had not been defined and was not even clear to themselves—it was decided to construct a brick school building for our own use. From year to year we have used the surplus of our income for purchasing materials for this building, but all the work on it has been done in the course of instruction, except the lathing and plastering, for which we lack adequate facilities. As the work progressed we were able to make use of many parts of the building for housing our shop departments, and now that it is entirely completed it affords us means of meeting the financial strain to which we have been subjected by the economic disturbances of the past few years.

In addition to the possession of a valuable building, through this experiment we have acquired a fund of information that could not have been had in any other way. Notwithstanding that we have been able to carry on and complete this project, we are now convinced that the

building trades do not appeal to boys coming out of the grammar school and passing through the adolescent period. It is in these trades, too, that the labor unions have been able most effectively to enforce a closed-door policy. Several years ago we deemed it advisable to consolidate our department of carpentry with the department of cabinet-making. Our instruction in bricklaying is now subordinated to cement work, both being included in our department of stonework. In the department of plumbing and sheet-metal work, the latter activity has increased in importance while the teaching of plumbing as a trade has been made almost hopeless by the stringent restrictions and regulations that have been imposed upon apprentices by the plumbers' union. Clay modeling and wood carving were dropped from our course shortly after the school was established, these branches having failed to meet expectations. The advent of the automobile, the aeroplane and wireless telegraphy gave a decided impetus to the demand for instruction in the metal-working industries, and the movement in that direction was still further accelerated by developments of the late war. In response to this demand we added a well equipped department of automotive mechanics, and in our department of electrical work the instruction in house wiring, which used to be somewhat attractive to boys, has largely given way to the study of autoignition. In the department of forgework the oxywelding process has been introduced, but notwithstanding this important innovation the relative importance of forgework in the field of industrial education has considerably diminished.

These changes in the character and content of the mechanical courses were greatly facilitated by our connection with our Lick School. In January, 1915, there was put into effect a plan whereby the boys of both schools are also afforded a wider range of choice of academic work. The details of this plan, and the reasons for it, were set forth in my report for the year 1914-15, but this change is reverted to at this time as one of the important developments of our first epoch of twenty years. Under this plan our boys have been enrolled concurrently in what we call the Lick-Wilmerding student body, and have been granted diplomas of graduation jointly in the names of both schools. Each school has contributed to the general result according to the spirit of its endowment, but each has retained its own faculty and its complete identity, as far as possible.

The economic upheaval of the past two years has put upon these endowments a strain that probably could not have been withstood by either school without the support of the other. The Wilmerding endowment was originally \$400,000 and the Lick endowment was \$540,000. Each institution had to purchase a site, erect and equip buildings for its use, and set apart a productive fund for its maintenance. The income from their investments being fixed and limited, it would have been neces-

sary to curtail their work to the point of serious impairment had it not been possible to capitalize their community of interests. The site and the buildings occupied by the Lick School being favorable for industrial and manufacturing purposes, and the building that was constructed by the Wilmerding boys being ready for complete occupancy, it has been agreed between the trustees of the Lick School and the Wilmerding School Committee of the Board of Regents that the Lick block shall be leased and the work of both schools consolidated on the Wilmerding block, the money derived from leasing the Lick block to be apportioned between the two schools. Under this arrangement there will be derived an additional income of \$15,000 a year, and at the same time an appreciable saving will be effected by conducting the work in two buildings instead of four. Unless economic complications continue to multiply, we shall be able to carry on our work with a feeling of security and with an organization not only unimpaired but really stronger and more efficient than ever before, and with renewed inspiration.

During the past year 504 boys have been enrolled concurrently in the Lick and Wilmerding schools and 214 girls in the Lick and Lux schools.

Respectfully submitted,

GEORGE A. MERRILL,

Director.

DEAN OF WOMEN

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to present the following report for the year 1919-1920.

Nine years ago the office of the Dean of Women, at the request of the Associated Women Students, was charged by the President of the University with the supervision of the living conditions of freshmen women. No freshman woman may complete her registration at the University unless her college residence is approved by the Dean of Women. Since 1915, this duty has become increasingly difficult, and in August, 1919, the great numbers of new students and the lack of enterprise on the part of potential boarding-house keepers because of post-war conditions made its literal discharge impossible. Our figures show that at least 190 freshmen women lived during their first term in scattered, often isolated places, which were hastily inspected and approved to meet the emergency. Another group of about the same number were even less fortunate. They were obliged to live wherever they could find space in places which only by a stretch of the imagination approximated the requirements. Only 240 freshmen women were accommodated in regularly approved houses, and even in these houses conditions were often unfavorable. Families who had moved into Berkeley to be with their young people were obliged to perch anywhere, hoping to get bed space when the inevitable thinning of population set in. Again the fact was strikingly emphasized that only those students who are invited to membership in fraternities and clubs have the opportunity to secure the highest average of student comfort. This year eighty-two of the 1304 freshmen women lived in sororities and clubs. During the year there has been much restlessness and friction among the students on account of undesirable and uncomfortable living conditions. While I can quote figures only for the women, I have no doubt that conditions were equally unsatisfactory for the men.

The problem was pressing last August. It bids fair to be acute next August. One after another housekeepers are shutting their doors, partly on account of student restlessness but chiefly because the small private enterprise in housing and feeding cannot succeed in the prevailing conditions of service, prices, etc. Many of the houses that remain open do not welcome freshmen. We cannot see where desirable places for freshmen women are to be found. If the University cannot point to adequate living accommodations which meet its requirements the require-

ments must break down, leaving the University without the slightest power of supervision. The University needs dormitories for men and for women.

It is not only in the matter of housing new students that this office has felt the pressure of numbers. The thirty graduate advisers delegated by this office to advise and arrange study schedules were early overwhelmed by the large number of new students seeking help. This situation only emphasized a condition which has been obvious for some years—that the University has not developed an adequate plan for launching students on their career of study under intelligent guidance.

The graduate advisers—a corps of from twenty-five to thirty graduate students—who for six years have operated from this office at the opening of the fall semester, were thought of at first only as a temporary expedient until a more far-reaching method of advising students could be devised. Such a plan is yet to be made. The advantage to this office in making each freshman woman conscious of its existence by establishing an immediate administrative bond is obvious. On the other hand, an advisory system which does no more than launch a student (the graduate advisers resign at the end of two weeks) and provides no means for continued interest except through a busy administrative office, is obviously only a bit of machinery to let loose the current over the future course of which there is no directive influence. During the last two years, when free election has been the policy of the University, this method of advising has been at a great disadvantage. Free election without constant guidance has led in many cases to narrowness, too early specialization, and the extremes of overwork and underwork. With a return to requirements for a Junior Certificate, a mechanical system of advising such as that represented by our graduate advisers will be efficacious as far as requirements and adjustments are concerned, but there is still a larger field for advisers which should be carefully considered by those interested in the reorganization of lower division work. In this connection Stanford University is entering upon an admirable experiment.

Among the women free election with inadequate guidance has brought to the surface the fact that the aim of the large majority of students in coming to the University is vocational. Study schedules made up without directive and illuminating supervision have become narrow in the interest of so-called vocational training. All that has been done about it is to discuss the consequent deterioration of academic standards and to attempt to create out of the wreck a traditional college of Letters and Science stripped of all suspicion of giving vocational training.

We have no quarrel with those who would reestablish and reaffirm a college dedicated to culture in its traditional sense. Many of us, however, who come in contact with large numbers of students believe that it is possible to draw the line too sharply between vocational and cultural

JUNE 30, 1920

LIABILITIES

Schedules

"M"	University of California, Surplus Invested in Fixed Assets	\$14,925,286.63
"N"	Endowment Funds	7,253,926.57
	Gains in Endowment Pool Investments	2,186.84
"O"	Fund Income Accounts—Unexpended Balances	120,442.85
"P"	Donation Accounts—Unexpended Balances	182,744.04
"Q"	Balances on hand to be used for Specific Purposes	169,662.64
"R"	Sundry Creditors	374,348.53
	Permanent Building Fund	60,934.25
	Revenue Account—Surplus	27,704.27

\$23,117,236.62

[Schedule "A"]

REAL ESTATE IN BERKELEY

University Campus Site	\$1,000,000.00
Hearst Hall and Hearst Cottage Site	7,000.00
Hillegass Tract Site	194,991.04
Oxford, Center, Addison Streets and University Avenue	50,000.00
Palmer House Site	17,500.00
Barrows Street Property	63,450.00
Sylvan Way and College Avenue Buildings and Lands	31,924.58
Sylvan Way Property	15,395.00
Telegraph Avenue and Alston Way Property	56,105.21
Watershed Lands	168,456.61
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	\$1,604,822.44
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[Schedule "B"]

BUILDINGS AND IMPROVEMENTS IN BERKELEY

Acid House	\$480.00
Agriculture—Forestry Division Portable House	1,237.76
Agriculture Hall	212,883.85
Anatomical Laboratory	9,323.70
Architectural Building	23,377.53
Bacon Hall	60,515.74
Bacteriological Laboratory Building	480.00
Barn	2,300.00
Boalt Hall of Law	159,287.61
Botany Building	5,600.00
Budd Hall	7,200.00
California Field Bleachers	20,000.00
California Hall	275,164.73
Campanile	216,983.02
Chemistry Addition No. 2	28,648.75
Chemistry Auditorium	36,314.67
Chemistry Building	81,000.00
Chemistry Storehouse	11,459.53
Civil Engineering Hall	39,307.15
Civil Engineering Laboratory	2,400.00
Civil Engineering Testing Laboratory	10,116.08
Concrete Bridge (near Faculty Club)	1,387.92
Concrete Bridge (near Football Statue)	3,384.33
Concrete Bridge (Telegraph Avenue)	10,922.86
Conservatory Building	10,800.00
Dairy Barn	2,400.00
Domestic Science Building	16,481.70
Drawing Building	19,354.18
Drinking Fountain (Class of 1914)	619.10
East Hall	18,000.00
Electric Construction on Campus	27,028.10
Entomological Laboratory	2,569.99
Faculty Club Building	30,000.00
Fertilizer Control Laboratory	26,385.72
Filter Plant—Strawberry Cañon	6,406.48
Gilman Hall	197,178.77
Girton Hall	4,032.34
Greek Theatre	45,000.00
Handball Courts	666.50
Harmon Gymnasium Building	52,092.24
Hearst Hall	59,398.27
Hearst Memorial Mining Building	646,800.70
Heating System	60,894.19
Hilgard Hall	365,078.52
Hygiene and Pathology Building	39,450.22
Manure Pit—Dairy	1,031.15
Mechanics Building	61,025.00
Military Science Building	7,240.14
Carried forward	\$2,919,708.54

[Schedule "B"—Continued]

<i>Forward</i>	\$2,919,708.54
Milk House—Dairy	4,160.60
Mill (for Carpenters' Shop)	3,493.55
John Mitchell Monument	358.95
Museum Building	3,667.77
North Hall	2,000.00
Painters' Shop	2,000.00
Philosophy Building	8,000.00
Plant Houses	700.00
Plumbing Shop	1,200.00
Platform Scales	350.00
Power House (Building and Machinery)	153,497.56
President's House	113,868.35
Printing Office Building	21,441.74
Radio Building—Mechanics' Department	825.00
Rifle Range	501.90
Roads, Walks, Landscape Gardening, etc.	120,882.27
Running Track	60,000.00
Sather Esplanade	40,428.69
Sather Gateway	40,118.77
Senior Hall	5,915.02
Shooting Gallery	50.00
South Hall Addition	5,872.13
South Hall	129,578.75
Spreckels Physiological Laboratory	25,000.00
Storage Bins	1,000.00
Storehouse	10,280.53
Strawberry Cañon Weir	569.80
Students' Infirmary and Annex Buildings	29,073.09
Students' Observatory	8,500.00
Sundial	350.00
Superintendent's Office (Grounds and Buildings)	1,200.00
Swimming Tank	17,200.00
Tennis Courts	22,115.24
Tool House—Botany Garden	282.90
Trunk Sewer	6,356.10
University Cottages	5,900.00
University Library Building	1,236,425.77
Vertebrate Zoology Museum Building	15,094.31
Viticultural Laboratory	400.00
Wheeler Hall	709,056.76
Women's Athletic Field	2,297.67
Women's Swimming Pool	12,445.34
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	\$5,742,167.10
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[Schedule "C"]

REAL ESTATE AND IMPROVEMENTS NOT IN BERKELEY

Affiliated Colleges—Buildings and Site	\$415,205.30
Congressional Lands	10,568.92
Dentistry Building	29,940.98
Hahnemann Hospital Buildings	144,824.42
Hahnemann Hospital Site	25,000.00
La Jolla Buildings	101,655.36
La Jolla Lands	90,000.00
Lick Observatory—Lands and Buildings	387,000.00
Lick Observatory—Cook Tract	960.00
Lick Observatory—Duckworth Tract	316.42
Lick Observatory—Hartzoke Tract	262.73
Lick Observatory—Holden Tract	511.25
Lick Observatory—Barn	1,254.95
Lick Observatory—Dormitory and Cottages	55,169.08
Lick Observatory—Electric Light and Power Plant	14,350.26
Lick Observatory—Tank	2,701.00
Lick Observatory—Vault	19,834.70
Los Angeles Buildings	24,999.70
Los Angeles Real Estate	100,000.00
Meloland Buildings	3,021.53
Potrero Avenue Lots	10,364.39
Public Building Lands	800.00
Riverside Buildings and Improvements	178,136.92
Riverside Lands	78,769.90
Riverside Real Estate	2,500.00
San Francisco Real Estate—Hyde Street	30,000.00
San Francisco Institute of Art	235,150.00
Southern Branch—Buildings and Improvements	647,490.55
Southern Branch—Land	110,000.00
Tulare County Real Estate	10,450.00
University Farm, Davis	571,991.37
University Hospital Building	671,353.63
Whittier Buildings	12,821.31
Wilmerding School—New Building	80,332.69
Wilmerding School—Old Building	24,906.46
Wilmerding School—Real Estate	67,299.09
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	\$4,159,942.91
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[Schedule "N"]

ENDOWMENT FUNDS

Fund	Use of Income	Gross Income 1919-1920	Amount of Fund
Annie M. Alexander Endowment Fund	Support—Museum of Vertebrate Zoology	\$7,685.77 C	\$200,000
Alumnae Y.W.C.A. of University of California	Payment to Secretary	30.00 B	400
Alumni Association Life Membership	Payment to Alumni Association	243.10 B	4,235
Alumni Hall Fund	Added to Fund	762.56 A	13,500
Alumnus Book	Purchase of Books	307.28 C	5,200
Associated Women Students (Housing)	Added to Fund	71.25 A	1,200
Base Hospital Endowment	Support—Medical School and Hospitals	316.77 C	7,100
Philo Sherman Bennett Prize	Prizes	42.64 C	700
Joseph Bonnheim Scholarship Endowment	Scholarships	4,325.00 C	70,000
Edward Booth Loan	Added to Fund	1.32 A	200
John Burns Loan	Added to Fund	.73 A	100
Horace W. Carpentier Endowment	Books and Materials (Oriental)	4,850.79 C	100,850
Class of 1874 Library	Purchase of Books	3.02 C	90
Class of 1881 Loan	Added to Fund	34.62 A	1,300
Class of 1886 Loan	Added to Fund	145.50 A	6,200
Class of 1887 Library	Purchase of Books	25.16 C	400
Class of 1895 Loan	Added to Fund	16.41 A	800
Class of 1897 Library	Purchase of Books	6.00 C	100
Class of 1897 Loan	Added to Fund	21.52 A	1,200
Class of 1898 Loan	Added to Fund	4.87 A	200
Class of 1900 Library	Purchase of Books	35.94 C	600
Class of 1902 Library	Purchase of Books	7.15 C	100
Class of 1903 Loan	Added to Fund	28.19 A	1,400
Class of 1906 Fund	Payment to Secretary of Class	17.15 B	300
Class of 1907 Permanent Endowment—Books	Purchase of Books	28.59 C	500
Class of 1907 Permanent Endowment—Class	Payment to Secretary of Class	8.58 B	100
Class of 1908 Fund	Added to Fund	12.58 A	200
Class of 1909 Endowment	Payment to Secretary of Class	34.31 B	600
Class of 1909 Loan	Payment to Secretary of Class	15.33 B	1,200
Class of 1910 Endowment	Payment to Secretary of Class	77.21 B	1,300
Class of 1911 Class Fund	Payment to Secretary of Class	57.20 B	1,000
Class of 1911 Loan	Payment to Secretary of Class	28.15 B	700
Class of 1912 Fund	Payment to Secretary of Class	108.67 B	1,900
Class of 1913 Fund	Payment to Secretary of Class	68.06 B	1,100
Class of 1914 Fund	Payment to Secretary of Class	72.92 B	1,200
Class of 1915 Fund	Payment to Secretary of Class	57.20 B	1,000
Class of 1916 Fund	Payment to Secretary of Class	51.47 B	900
Class of 1917 Endowment	Payment to Secretary of Class	114.38 B	2,000
Class of 1919 Fund	Payment to Secretary of Class	114.38 B	2,000
Class of Eighty-five Fund	Loans to Students	61.09 C	1,000
Edith Claypole Memorial Research Fund (in Pathology)	$\frac{1}{4}$ added to Fund $\frac{3}{4}$ for Scholarships	159.50 A 478.52 C	11,300
P. Chas. Cole Scholarship	Scholarship	156.75 C	2,800
Therese F. Colin European Fellowship	Fellowship	138.10 C	9,400
Therese F. Colin European Fellowship No. 2	Payment to Beneficiary	67.03 B	1,100
Emily Chamberlain Cook Prize	Prize in Poetry	72.76 C	1,200
Consolidated Perpetual Endowment	General Support	55,229.48 C	992,200
E. V. Cowell Fund (for Gymnasium Building)	Building	5,101.02 C	250,000
Mrs. Emma S. Davis Scholarship Fund	Scholarship	.85 C	2,000
Horace Davis Library	Purchase of Books	571.94 C	10,000
Carried forward		\$81,868.81	\$1,715,135

Schedule "N"—Continued]

Fund	Use of Income	Gross Income 1919-1920	Amount of Fund
	<i>Forward</i>	\$81,868.81	\$1,715,137.25
W. R. Davis Scholarship	Scholarships	629.13 C	11,000.00
E. A. Denicke Library	Purchase of Books	114.78 C	2,000.00
E. A. Denicke Loan	Added to Fund	413.65 A	7,815.20
General Endowment	Added to Fund	414.21 A	7,555.39
D. Library	Unproductive	none	421.00
V. Dohrmann Memorial Loan	Added to Fund	304.16 A	6,246.64
Deer Scholarship	Scholarships	988.50 C	17,283.35
Hen du Bois Endowment	Scholarships	286.91 C	5,016.52
General Endowment	General Support	40,761.60 C	732,485.14
Jane Flood Endowment	Fellowships and Department of Economics	20,917.05 C	377,549.02
C. W. and Mrs. Sarah E. Fox Memorial	Beds in University Hospital	4,000.00 C	100,000.00
Grey Endowment	Indefinite	17.20 C	997.12
J. M. Goewey Scholarship	Scholarships	938.86 C	16,415.50
I. Greenwald Scholarship Fund	Scholarships	650.80 C	20,500.00
Obstacle "W" Loan	Added to Fund	11.67 A	504.07
Hierslag Loan	Loans to Students	346.60 C	6,000.00
Pebe A. Hearst Fountain	Purchase of Books	11.86 C	207.60
Pebe A. Hearst Fund—Publication of Works of Cervantes	Added to Fund	206.82 A	6,157.88
V. Hellman Scholarship	Scholarships	2,000.00 C	50,000.00
Stein Fund for Physiological Research	Research in Physiology	64.74 C	3,775.76
Se Memorial Scholarship	Unproductive	none	3,800.00
Hard Fund	Payment of Annuity	1,541.49 B	32,500.00
Edusthane Students Loan	Added to Fund	4.60 A	240.01
S. M. Hitchcock Endowment	Lectures	571.94 C	10,000.00
G. William Hooper Endowment	Unproductive	none	1,000,000.00
Egan Bequest	Agriculture—University Farm	21.08 C	1,070.30
Chelius B. Houghton Scholarship	Scholarships	171.58 C	3,000.00
Bee Howard Memorial	Scholarships	571.94 C	10,000.00
Wison Foundation	Payment of Annuity	2,782.07 B	75,000.00
Wison Lecture Fund	Lectures	249.69 C	6,371.00
Samuel C. Irving Prize	Prize	28.59 C	500.00
Art Sidney Johnston Memorial Scholar- ship	Scholarships	200.17 C	3,500.00
Orie M. Jones Scholarship	Scholarships	4,884.36 C	100,000.00
Jasch Endowment	Indefinite	4.00 C	600.00
Kerney Bequest	Department of Agriculture, etc.	100,678.17 C	1,095,913.90
Matin Kellogg Fellowship Endowment	Fellowship	1,139.33 C	20,000.00
W. Watt Kerr Memorial	Loans to Medical Students	400.37 C	7,000.54
Robert Kraft Scholarship	Scholarships	2,859.71 C	50,000.00
G. Ladd Scholarship	Geo. Ladd Prix de Paris	1,968.82 C	27,074.43
Lia Lebus Endowment	Support—University Hospital	228.78 C	4,000.00
Lonte Memorial Fellowship	Fellowship	594.82 C	10,400.00
Da H. Leffin Endowment	Los Angeles Medical School	25.74 C	8,321.79
L. Observatory Fund	General Support	4,645.36 C	90,018.16
Ln Fund No. 2	Unproductive	none	200.00
Ln Fund No. 3	Added to Fund	2.11 A	106.80
W. Mackay, Jr. Endowment	Fellowships and Department of Mechanics	6,172.88 C	114,036.55
Massachusetts Relief Fund Endowment	Support—University Hospital	5,719.43 C	100,000.00
Mal Loan Fund	Added to Fund	12.11 A	378.02
Maorial Gift Fund—Class of 1916	Added to Fund	96.82 A	1,766.12
Morah Prize	Added to Fund	2.12 A	50.00
M's Dormitory	Added to Fund	32.42 A	591.52
Eene Meyer, Jr., Library Endowment	Purchase of Books	114.38 C	2,000.00
D. O. Mills Endowment	Department of Philosophy	9,754.71 C	170,553.76
Ming Students Loan	Added to Fund	228.46 A	7,780.22
<i>Carried forward</i>		\$300,655.40	\$6,043,840.56

[Schedule "N"—Continued]

Fund	Use of Income	Gross Income 1919-1920	Amount of Fund
	<i>Forward</i>	\$300,655.40	\$6,043,841
Nalanda Loan	Added to Fund	1.04 A	52
Napa Seminary Loan	Added to Fund	15.64 A	86
Bernard Nathan Scholarship	Scholarships	285.96 C	5,000
Oriental Institute Endowment	Unproductive	none	4,920
Paget Scholarship Fund	Scholarship	172.09 C	3,000
Whitney Palache Endowment	Bed in University Hospital ..	571.94 C	10,000
Parker Memorial Fund	Indefinite	5.99 A	52
Frank M. Pixley Scholarship	Scholarship	203.80 C	3,560
Prytanean Fund (Students' Union)	Added to Fund	24.31 A	44
Prytanean Fund (Hospital)	Added to Fund	17.55 A	32
Prytanean Fund (Housing)	Added to Fund	76.60 A	1,390
Michael Reese Library	Purchase of Books	2,859.71 C	50,000
Richardson Latin Translation Prize	Prize	91.50 C	1,600
Ralph D. Robertson Memorial Loan	Added to Fund	6.44 A	32
Herman Royer Endowment	Added to Fund	322.95 A	5,890
San Francisco Girls' Union Scholarship	Scholarship	250.00 C	5,000
Searles Fund	Research	4.13 C	150
Lucy M. Shaw Bequest	Bed in Hahnemann Hospital ..	350.00 C	5,000
Sheffield Sanborn Scholarship	Scholarships	857.91 C	15,000
San Joaquin Women's Club Loan	Added to Fund .....	.95 A	14
Jane K. Sather Fund (Campanile and Bells)	Added to Fund (awaiting distribution)	160.34 A	8,018
Jane K. Sather Classical Chair	Departments of Greek and Latin	7,564.43 C	143,648
Jane K. Sather Historical Chair	Department of History	7,040.16 C	146,929
Jane K. Sather Historical Library	Purchase of Books	723.95 C	12,468
Jane K. Sather Law Library	Purchase of Books	1,232.16 C	21,545
Jane K. Sather Library	Purchase of Books	571.94 C	10,000
Jane K. Sather Fund awaiting distribution	Added to Fund	1,609.62 A	81
Snell Seminary Memorial Loan	Added to Fund	1.47 A	31
Special Senior Class Loan	Added to Fund	3.88 A	19
Horatio Stebbins Scholarship	Scholarship	228.78 C	4,000
Students' Coöperative Society	Added to Fund	643.79 A	13,164
Summer Session Endowment	Indefinite	343.16 C	6,000
Bertha Henicke Taussig Memorial Scholarship	Scholarships	571.94 C	10,000
Willard D. Thompson Memorial	Scholarships	3,327.95 C	55,733
Edward Tompkins Endowment	Department of Oriental Languages	6,117.99 C	106,823
University Endowment	General Support	4,045.83 C	70,730
University Hospital Endowment	Support—University Hospital ..	37.15 C	643
University Hospital Endowment—San Francisco Maternity	Support—University Hospital ..	571.95 C	10,000
University Medal	University Medal	222.83 C	3,890
Veltin Endowment	Students' Infirmary	57.20 C	1,000
Walcott Loan Fund	Added to Fund	8.33 A	33
F. J. Walton Memorial Loan	Added to Fund	482.06 A	9,135
Mary J. Watson, M.D.—Homeopathic Instruction	Scholarship—Medical School ..	71.49 C	1,250
Barbara Weinstock Lectureship	Lectures	430.81 C	6,850
Whiting Fund	Fellowship and Department of Physics	1,507.07 C	26,350
J. Clute Wilmerding Endowment	Support—Wilmerding School ..	23,968.92 C	417,861
Xi Psi Phi Loan	Added to Fund	4.76 A	212
Women's Dormitory	Added to Fund	172.17 A	3,140
Y.W.C.A. Endowment	Payment to Secretary, Y.W.C.A.	325.00 B	6,500
		<u>\$368,821.04</u>	<u>\$7,253,920</u>

[Schedule "N"—Continued]

SEGREGATION OF INCOME

A For Additions to Funds	\$6,546.09
B For Payments to Beneficiaries of Trust Funds	5,813.70
C For Current Use	356,461.25
	<hr/>
	\$368,821.04

NOTE.—With regard to the income shown as for "Current Use" it should be understood that in several cases unexpended income at the end of the year is added to the principal of the fund.

RECONCILIATION OF ENDOWMENT FUNDS

Total Funds June 30, 1919	\$6,674,027.11
Additions to Endowment as per Expenditures Schedule No. 16	588,942.41
	<hr/>
	\$7,262,969.52

Less withdrawals from Endowment Funds used as Income

(see Income Schedule No. 8) \$7,723.51

Reductions in funds as follows:

Class of 1886 Loan Fund—portion of note written off	9.63
Therese F. Colin European Fellowship Fund—portion	
of real estate valuation written off	1,300.00
F. W. Dohrmann Loan Fund—refund of interest ....	.31
Furrey Endowment Fund—legal expenses	6.70
F. J. Walton Memorial Loan Fund—refund of interest	2.80

\$9,042.95

Total Funds June 30, 1920 \$7,253,926.57

INCOME

FROM JULY 1, 1919, TO JUNE 30, 1920

Schedule

No. 1	United States	\$159,338.90	
No. 2	State Appropriations	2,722,904.37	
No. 3	Students' Fees and Deposits	594,210.96	
No. 4	Hospitals, Infirmary and Professional Colleges ..	501,706.83	
No. 5	Departmental Sales and Miscellaneous Receipts	546,432.09	
No. 6	Income from Endowment Investments:		
	For Current Use	\$356,461.25	
	For Addition to Endowment		
	Funds	6,546.09	
	For Payments on Trust Funds ..	5,813.70	
			368,821.04
No. 7A	Gifts for Current Use	\$110,718.75	
No. 7B	Gifts for Buildings and Equipment	302,263.82	
No. 7C	Gifts for Endowment	530,343.86	
			943,326.43
No. 8	Withdrawals from Endowment Funds used as		
	Income	7,723.51	
			<u>\$5,844,464.13</u>

EXPENDITURES

FROM JULY 1, 1919, TO JUNE 30, 1920

Schedule

No. 9	Administration	\$223,892.28	
No. 10	General Maintenance, Operation, etc.	350,341.95	
No. 11	Land, Buildings, Improvements, Alterations, etc.	204,989.88	
No. 12	Education and Research	3,846,634.37	
No. 13	Scholarships, Fellowships and Prizes	52,061.10	
No. 14	Miscellaneous Expenditures not classified	487,038.07	
No. 15	Payments to Beneficiaries of Trust Funds, etc.	9,109.82	
No. 16	Additions to Endowment Funds	588,942.41	
			<hr/>
			\$5,763,009.88
No. 17	Expenditures prior to June 30, 1919, brought forward	\$582,620.71	
No. 17	Less Income prior to June 30, 1919, brought forward	277,313.29	
			<hr/>
			305,307.42
No. 18	Income prior to June 30, 1920, carried forward		500,398.31
			<hr/>
			\$6,568,715.61
No. 18	Less Expenditures prior to June 30, 1920, carried forward		607,091.76
			<hr/>
	Net Total Expenditures	\$5,961,623.85	
	Income as on page 280	5,844,464.13	
			<hr/>
	Deficit for the year	\$117,159.72	
			<hr/>
	Credit Balance—Revenue Account, June 30, 1919	\$144,863.99	
	Credit Balance—Revenue Account, June 30, 1920	27,704.27	
			<hr/>
	Deficit for the year as above	\$117,159.72	

NOTE.—The deficit of \$117,159.72 does not include the overdrafts carried forward to 1920–1921 as per Balance Sheet, Schedule “I” (particularly Medical School and Hospitals, \$89,029.50, and University Farm Income, \$83,272.34), but it does include as “Income” the Deficiency Claim of \$70,000.00, approved by the State Board of Control for 1919–1920.

[Schedule No. 1]

INCOME FROM UNITED STATES

Adams Fund	\$15,000.00
Hatch Fund	15,000.00
Morrill Fund	50,000.00
Smith-Lever: Federal	51,745.26
Federal Supplementary Extension Fund	27,593.64
	<hr/>
	\$159,338.90
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[Schedule No. 2]

INCOME FROM STATE APPROPRIATION

Agriculture (General Support and Maintenance)	\$453,161.07
Citrus Experiment Station (Support)	19,962.58
Citrus Experiment Station—Buildings and Improvements	3,166.19
Deciduous Fruits	36,184.99
Deficiency Claim 1919-1920	70,000.00
Farm Advisors	33,160.43
General Support	199,999.92
Insecticide and Fungicide Control	4,966.19
Medical School	49,999.92
Salaries	74,724.96
Scripps Institution	17,499.96
Smith-Lever: State	47,828.97
Street Improvement—Berkeley	11,985.65
Southern Branch (various appropriations)	234,021.92
University Extension	49,999.92
University Farm—Animal Husbandry	41,140.26
University Farm—Creamery Building	400.00
University Farm—Dormitory	83.30
University Farm—Riverside (land)	23,000.00
University Farm—Sewerage and Water System	3,559.86
University Farm—Small Buildings	200.23
State Board of Education: Smith-Hughes Act (\$2,411.25 additional shown under Southern Branch Income— Schedule No. 3):	
Agricultural Teacher Training	\$13,970.53
Industrial Teacher Training	15,141.10
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	29,111.63
State Department of Agriculture:	
Fertilizer Control	\$6,229.28
Walnut Research	4,287.68
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	10,516.96
State University Fund	1,308,185.09
State University Fund—Kelp Act	44.37
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	\$2,722,904.37

[Schedule No. 3]

STUDENTS' FEES AND DEPOSITS

Agricultural Deposits	\$1,182.52
Anatomy Fees	419.00
Astronomy Fees	429.85
Biochemistry Deposits	334.69
Botany Fees	1,753.75
Changing Course Fees	3,966.00
Chemistry Deposits	34,561.92
Civil Engineering Fees	5,562.35
Delayed Payment Fees	630.00
Delayed Registration Fees	2,654.00
Drawing Fees	149.00
Economics Fees	4,124.00
Economics 140 Fees	493.50
English Fees	33.50
Gymnasium Fees	33,535.20
Gymnasium Fines	1.00
Gymnasium Suit Fees—Men	8,247.27
Gymnasium Suit Fees—Women	11,619.00
History Fees	2,861.00
History Syllabus Fees	1,633.50
Home Economics Deposits	426.10
Home Economics Fees	1,028.00
Hygiene Deposits	177.98
Infirmery Fees	53,506.20
Key Deposits	1,000.00
Law Library	5,212.50
Library Deposits	109.00
Mechanics Deposits	3,349.45
Medical Appointment Fees	241.50
Medical Examination Fees	3.00
Military Uniform Fees	1,134.17
Mineralogy and Geology Fees	442.50
Mining and Metallurgy Deposits	1,183.20
Non-Resident Fees	16,186.00
Pathology and Bacteriology Deposits	1,740.34
Physical Appointment Fees	63.00
Physics Deposits	3,741.00
Physiology Deposits	547.50
Political Science Fees	818.25
Special Examination Fees	2,286.00
Zoology Deposits	2,928.30
Dentistry Fees, Deposits, etc.	44,731.68
Dentistry—Special Students Deposit Account	2,450.85
Los Angeles Medical Department Fees	3,811.66
Medical School Fees and Deposits	28,554.18
Carried forward	\$289,863.41

[Schedule No. 3—Continued]

Forward	\$289,863.41	
SUMMER SESSION AND INTERSESSION:		
Intersession 1920	\$20,182.84	
Summer Session 1918	8.00	
Summer Session 1919	13,857.00	
Summer Session 1920	80,002.85	
Summer Session Civil Engineering	2,788.19	
Summer Session Mechanics	625.55	
Summer Session Los Angeles—1919	22,417.51	
Summer Session Los Angeles—1920	24,687.10	
		164,569.04
SOUTHERN BRANCH:		
Fees, Deposits, etc.	\$30,090.60	
State Board of Education: Smith-Hughes Act	2,411.25	
		32,501.85
UNIVERSITY EXTENSION:		
University Extension—Berkeley and San Francisco	\$76,929.23	
University Extension—Los Angeles	30,328.68	
University Extension—Dentistry	18.75	
		107,276.66
		<u>\$594,210.96</u>

[Schedule No. 4]**HOSPITALS, INFIRMARY AND PROFESSIONAL COLLEGES**

Hahnemann Hospital	\$132,282.03
Los Angeles Medical Department Dispensary	7,707.40
University Hospital	330,989.77
Dental Department (Infirmary)	18,899.97
University Hospital—Professional Fees Reserve	232.59
University Hospital—Radium Earnings Reserve	1,230.76
Students' Infirmary—Operations and Dental Work	10,364.31
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	\$501,706.83
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[Schedule No. 5]

DEPARTMENTAL SALES AND MISCELLANEOUS RECEIPTS

AGRICULTURAL:

Agriculture—Land Settlement Board	\$2,394.71	
Agriculture—Education	854.75	
Agriculture—Extension	3,441.10	
Agriculture—Director	21.90	
Agriculture—Summer Session	222.25	
Agronomy	455.17	
Chicken-pox Vaccine	4,660.53	
Citrus Experiment Station	6,177.24	
Citrus Investigations (Citrus Growers and Shippers)	1,155.00	
Dairy	20,936.57	
Dairy Certification—Alameda	1,819.92	
Dairy Certification—San Francisco	1,718.49	
Deciduous Fruits	293.29	
Entomology	9.00	
Fertilizer Control	609.40	
Floriculture	410.53	
Forestry	652.26	
Hog Serum	22,584.46	
Imperial Valley	1,936.54	
Insecticide and Fungicide Registration	5.00	
Kearney Experiment Station	381.82	
Lemon Investigations (Lemon Men's Club)	960.00	
Nutrition	498.96	
Official Advanced Registry Tests	1,544.37	
Soil Survey	487.14	
University Farm	277,233.55	
Veterinary	469.89	
Viticulture	6,882.71	
		<hr/>
		\$358,816.55

VARIOUS:

Sale of Publications—Academy of Pacific Coast History ..	\$7.25	
Sale of History 1 Syllabi	52.00	
Sale of Brief Account of Lick Observatory	133.65	
Sale of Lick Observatory Publications	24.00	
Sale of Keeler Volume	4.00	
Sale of Publications	7,539.90	
Sale of Syllabi	4,459.81	
Sale of Tebtunis Papyri	4,475.20	
Sale of Weinstock Lecture Publications	160.56	
Campanile Maintenance	745.87	
Examination of Schools	570.00	
Library Exchange	236.05	
Music and Drama	35,059.80	
Rental of Hyde Street Property—San Francisco	80.00	
Sale of Herzstein Property—New Monterey	3,000.00	
Scripps Institution, Rents and Miscellaneous Receipts	5,690.46	
		<hr/>
<i>Carried forward</i>	\$62,238.55	\$358,816.55

[Schedule No. 5—Continued]

<i>Forward</i>	\$62,238.55	\$358,816.55
Scripps Institution—Sale of Boat "Agassiz"	\$6,633.00	
Shipping Board Course—U. S. Shipping Board	7,800.00	
Southern Branch—Cafeteria	23,768.89	
University Hospital—Building and Equipment Suspense Account, refund on charges	425.00	
Vocational Education—Federal Board Reimbursement for certain supplies 1918–1919	15.30	
Lick Observatory—meeting at Brussels, refund of charges in 1918–1919 accounts	1,247.31	
Wilmerding School—Sales of manufactures	165.05	
Library Fines	1,602.50	
Sale of Apparatus, Junk, etc.	467.45	
Interest on Students' Infirmary Notes	163.57	
Interest on Bank Balances	5,268.29	
Rents (from General University Property)	2,301.75	
Unclaimed Checks	1,116.37	
Interest on Radium Fund—University Hospital	365.89	
Interest on Dentistry Building Addition	4,115.40	
Miscellaneous Receipts (Revenue Account)	421.67	
University Hospital Stores—adusting figures to offset expenditures for "Stores" included as expenditure for University Hospital in Report for 1918–1919	34,454.13	
Class of 1886 Loan Fund—payment of note for loan to student, previously written off	45.00	
Class of 1909 Loan Fund—payment of note for loan to student, previously written off	55.00	
Doe Library Fund—adjustment of amount of fund to equal assessments paid on Kennedy Mining & Milling Co. stock (see Schedule No. 14)	420.00	
Kearney Bequest—increase in fixed assets for year 1919– 1920 out of income from Kearney Vineyard	27,407.71	
Medal Loan Fund—overpayment of note	1.00	
Printing Office Profit for 1919–1920	7,116.71	
	<hr/>	187,615.54
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		\$546,432.09
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[Schedule No. 6]

INCOME FROM ENDOWMENT INVESTMENTS

Bond Interest	\$75,024.45
Dividends on Stocks	19,801.20
Interest on Emily M. Arguello Contract	12.08
Interest on Bear Gulch Water Co. Notes	278.05
Interest on Berkeley Real Estate (transferred from Permanent Building Fund—see Schedule No. 14)	2,641.33
Interest on Hotel Rafael Investment	10,249.04
Interest on Hahnemann Hospital Loan	1,294.44
Interest on Hooper Foundation Expenditures	31,522.58
Interest on Moneys not invested	6,234.56
Interest on Radium Loan—Medical School and Hospitals	483.66
Kearney Vineyard Income (see also Schedule No. 5)	96,876.48
Loan Fund Interest	248.80
Mortgage Interest	31,383.52
Rents	92,770.85
	<hr/>
	\$368,821.04
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[Schedule No. 7]

GIFTS

A. FOR CURRENT USE:

American School of Oriental Research in Jerusalem— Congregational Emanu-El		\$100.00
Anatomy Research:		
American Medical Association	\$400.00	
E. I. DuPont de Nemours Company	750.00	
		1,150.00
Bancroft Library Manuscripts—Anonymous		250.00
Botulinus Investigation—National Canners Association		4,000.00
College of Commerce Books—F. P. Nutting		100.00
Dentistry Research:		
California State Dental Association	\$465.00	
San Francisco District Dental Association	250.00	
		715.00
Economics Books		10.00
Fellowships:		
LeConte Fellowship—Various donors	\$600.00	
Native Sons of the Golden West	3,000.00	
Radiographic Research—Associated Radiograph Laboratories	200.00	
		3,800.00
Hearst Hall Alterations—Estate of Phoebe A. Hearst		2,000.00
Hooper Foundation—Sophronia T. Hooper		10,000.00
Infirmiry Ambulance—Various donors		596.94
Library of French Thought—Mrs. Thos. R. Bard		62.50
Library—Hindu Students		15.00
Lick Observatory—Chile Station:		
F. W. Bradley	\$1,000.00	
W. H. Crocker	1,000.00	
A. B. Spreckels	1,000.00	
Ogden Mills	1,000.00	
Mrs. W. H. Crocker	1,000.00	
		5,000.00
Museum of Vertebrate Zoology—Annie M. Alexander		12,223.59
Musical Scores—Mrs. Evan Williams		100.00
Palaeontology Department—a friend		7,400.00
Pathology Research—United States Interdepartmental Social Hygiene Board		3,875.00
Pensions—Carnegie Institution		27,457.00
Prize—Newman Hall Association		100.00
Public Speaking Department—S. S. Oddie		50.00
Radium Purchase Expenses, University Hospital—R. J. Taussig		625.00
Carried forward		\$79,630.03

[Schedule No. 7—Continued]

<i>Forward</i>		\$79,630.03	
Scholarships:			
Florence P. Baker	\$150.00		
Wm. Watt Kerr—Medical Alumni	180.00		
Knights of Columbus	4,778.60		
James Rosenberg—Parents of	844.02		
San Jose High School	125.00		
Levi Strauss & Co.	3,500.00		
Swedish-American Patriotic League	125.00		
Mrs. Evan Williams	250.00		
		9,952.62	
Scripps Institution:			
Maintenance—E. W. Scripps	\$9,000.00		
Publications—E. W. Scripps	2,000.00		
Special Fund—E. W. Scripps	8,463.60		
		19,463.60	
Students' Infirmary:			
Mrs. Emma W. Barton	\$50.00		
John Smith	250.00		
Prytanean Society	100.00		
Various	12.50		
		412.50	
University Extension:			
Wm. R. Haynes	\$180.00		
Geo. I. Cochran	180.00		
W. D. Longyear	180.00		
Henry Chandler	180.00		
Lee A. Phillips	180.00		
Arthur Letts	180.00		
M. S. Hellman	180.00		
		1,260.00	
		\$110,718.75	
B. FOR BUILDINGS AND EQUIPMENT:			
Marble Chairs in Greek Theatre—A. M. Bender	\$996.00		
Marjorie Green Foster Memorial Tablet—Various donors	103.00		
Radium Equipment—University Hospital:			
R. J. Taussig	\$1,000.00		
Geo. Whittell	5,000.00		
W. H. Crocker	10,000.00		
		16,000.00	
Henry Morse Stephens Memorial:			
Various Donors—Cash	\$110,892.20		
Various Donors—Liberty and Victory Bonds	16,900.00		
Various Donors (History I)—Cash	554.60		
Various Donors (History X)—Cash	331.28		
Interest on Fund (Cash and Bonds)	1,486.74		
		130,164.82	
<i>Carried forward</i>	\$147,263.82	\$110,718.75	

[Schedule No. 7—Continued]

<i>Forward</i>	\$147,263.82	\$110,718.75
University Hospital Building—Mrs. E. A. Drexler	125,000.00	
Boalt Hall of Law—Balance due from Boalt Trustees in connection with construction of Boalt Hall Building	30,000.00	
		<u>302,263.82</u>

C. FOR ENDOWMENTS:

Annie M. Alexander—		
For Annie M. Alexander Endowment Fund	\$200,041.12	
Subscriptions to University Base Hospital Fund No. 1—		
—For Base Hospital Endowment Fund	7,118.65	
Mrs. Robina M. Booth—		
For Edward Booth Loan Fund	200.00	
Mrs. Sarah Burns—		
—For John Burns Loan Fund	125.00	
Estate of Horace W. Carpentier—		
For Horace W. Carpentier Endowment Fund	25,887.50	
Estate of E. V. Cowell—		
For E. V. Cowell Endowment Fund (Gymnasium Building)	250,000.00	
Estate of Mrs. Emma S. Davis—		
For Emma S. Davis Scholarship Fund	2,000.00	
Estate of O. H. Greenewald—		
For O. H. Greenewald Scholarship Fund	20,500.00	
Trustees of Phoebe A. Hearst—		
For Hearst Fund for Publications	7,000.00	
Hindusthanee Foreign Students—		
For Hindusthanee Students Loan Fund	35.00	
Estate of James C. Horgan—		
For Horgan Bequest	1,070.30	
Various Donors—		
For Howison Lecture Fund	6,371.00	
Estate of Della H. Leffin—		
For Della H. Leffin Endowment Fund	8,321.79	
F. W. Bradley—		
For Mining Students Loan Fund	1,000.00	
Various Donors—		
For Parker Memorial Fund	523.50	
Edward F. Searles—		
For Searles Endowment Fund (this represents only the actual cash receipts to June 30, 1920; the various stock holdings not having been liqui- dated at that date)	150.00	
		<u>530,343.86</u>
		<u>\$943,326.43</u>

[Schedule No. 8]

WITHDRAWALS FROM ENDOWMENT FUNDS USED AS INCOME

Wilmerding Endowment Fund	\$6,674.57
Hearst Fund for Publications	1,048.94
	<hr/>
	\$7,723.51
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[Schedule No. 9]

ADMINISTRATION

Administrative Assistance	\$18,624.38
Alumni Association	2,999.96
Alumni Association—Bureau of Occupations	403.82
Auditing	2,233.28
Comptroller's Office Assistance	55,317.77
Examination of Schools	4,799.40
Expense—Administrative	20,528.58
Inauguration Expenses	2,692.59
Postage	5,452.63
President's Contingent	2,652.63
Printing, Stationery and Office Supplies	24,639.85
Recorder's Office Assistance	20,015.16
Salaries	54,110.22
Telephone, Telegraph and Express	9,422.01
	<hr/>
	\$223,892.28
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[Schedule No. 10]

GENERAL MAINTENANCE, OPERATION, ETC.

Fuel		\$1,248.92
Heating and Lighting		77,293.77
Janitors		69,131.40
Maintenance of Plant, Parnassus Avenue		1,123.40
Repairs		27,173.24
Site		34,717.60
State Compensation Insurance		3,878.02
Storehouse—deficit on operation 1919–1920		2,367.32
Water		12,763.77
Students' Infirmary	\$66,201.92	
Students' Infirmary Donations	55.29	
		66,257.21
Gymnasium Suits Maintenance—Men		9,686.16
Gymnasium Suits Maintenance—Women		8,679.60
Gymnasium Fees Expenditures		22,470.80
Interest on Bank Overdraft		6,502.26
Interest on Stephens Memorial Fund		546.87
Interest on Endowment Moneys not invested		6,234.56
Collection of Music for Chimes		267.05
		<hr/>
		\$350,341.95

[Schedule No. 11]

LAND, BUILDINGS, IMPROVEMENTS, ALTERATIONS, ETC.

In Berkeley:

Alterations in Armory	\$1,242.75
Anatomy Building Alterations	423.70
Carpenter Shop Addition	383.20
Chemistry Building Alterations	125.60
Drill Field and Play Ground	3,479.18
Greek Theatre Marble Chairs	996.00
Hahnemann Hospital Repairs	14,061.05
Harmon Gymnasium Alterations	1,584.45
Landscape Gardening—Agriculture Hall Terrace	1,149.55
Medical Building Alterations	8,392.85
Military Science Building	7,240.14
Path—California Hall to Oaks	2,970.05
Permanent Building Fund Contingencies	7,078.85
Permanent Building Fund Contingencies (1920–1921)	242.45
Physics Shop Heating	190.50
Planting	3,401.15
President's House Furnishings and Repairs	10,400.47
Street Improvement—Berkeley	11,985.65
Steam Line—Harmon Gymnasium	1,000.00
University Library Building Addition	227.50
Olney Lots—Telegraph Avenue and Allston Way	45,000.00
Olney Lots—Interest and Costs	3,005.21
Reduction of Investment Account for Real Estate in Berkeley (Oxford Street between Center Street and University Avenue) charged against balance on Rev- enue Account June 30, 1920	50,000.00
	<hr/> \$174,580.30

Not in Berkeley:

Citrus Experiment Station—Buildings and Improvements	\$3,166.19
University Farm—Riverside (Purchase of Land)	23,000.00
University Farm—Sewage and Water System	3,559.86
University Farm—Creamery Building	400.00
University Farm—Dormitory	83.30
University Farm—Small Buildings	200.23
	<hr/> 30,409.58
	<hr/> \$204,989.88
	<hr/> <hr/>

study; to degrade the one to mere repetition of processes and to theorize the other into thin smoke. There is constructive work to be done in harmonizing these two interests to meet the demands of the modern world of education. My first suggestion is a matter of state policy. It is the development of trade schools or vocational junior colleges which will answer the needs of those who, having completed a general high school course, wish to gain a profitable technique. Such schools would relieve the University of students (if there are any such with us) who want mere technique. The University, confident that its students wanted more than technique, might then take the next step and, recognizing that it is the misfortune rather than the fault of the University student with a vocational aim that her course has been narrow, seize its opportunity to capitalize the vocational aim in the interest of culture.

The difference between a broad (so-called cultural) and a narrow (so-called vocational) course, I take it, is not in the actual body of facts accumulated—the bulk is probably about the same—but in the conception the student gains of the far reaches of thought, his knowledge of his own ignorance and his ability to apply what knowledge he has to life. The trouble, then, is not so much with the subject matter on either side as with the way it is presented. Therefore the University would defeat its purpose to harmonize the vocational and cultural if it allowed itself to be broken up into technical schools or cultural colleges, with prescribed curricula beginning with the freshman year. It should rather maintain a strong nucleus of fundamental instruction, and that instruction should be grouped and interpreted by competent and enthusiastic advisers as to its bearing on the different vocational aims. The University must also guard against the misapprehension that its graduates are finished products capable of assuming at once highly paid technical or professional responsibilities. Apprenticeship must still follow a university training but the university graduate should have an intellectual grasp on the problems of life and work which may shorten his apprenticeship and put him quickly in a place of responsibility and usefulness.

A start has been made in this direction by the return to the Junior Certificate in the College of Letters and Science and by the development of certain committees, like the committee on journalistic studies and the committee on nursing, to advise students as to program and the relation of general study to a chosen profession.

In this office out of the experience of the last year, we believe that three things are of immediate importance to the women of the University: (1) adequate housing for students, (2) an enlarged and enlightened system of advisers for students, (3) the recognition of the value of the vocational aim in a college education.

Respectfully submitted,

LUCY WARD STEBBINS,

Dean of Women.

CALIFORNIA MUSEUM OF VERTEBRATE ZOOLOGY*

BERKELEY, July 1, 1920.

To the President of the University.

SIR: I have the honor to present the following report upon the work of the California Museum of Vertebrate Zoology for the year 1919-20.

In certain respects the last year has been the most important one since the founding of the museum. From the date of its inauguration, March 23, 1908, to the end of 1919, it has been dependent upon support furnished only from year to year and in large measure from one private source. Now the continuance of the scientific work of the museum is assured for all time, because of the establishment of an endowment.

On December 9, 1919, there was received by the Regents of the University the sum of \$200,000 from Miss Annie M. Alexander, who founded the museum and for twelve years provided for its upkeep and growth. This sum forms a perpetual fund, the income from which is to be devoted to the maintenance of the California Museum of Vertebrate Zoology. Conditions of the gift provide first of all that the Museum's store of specimens and information be cared for in as safe and accessible a manner as possible; furthermore, that the staff participate in field work and research relative to the distribution, speciation, life history, and economic relations of the higher vertebrate animals of western North America, particularly of California; and lastly, that the staff contribute to the increase and spread of scientific and popular knowledge in the fields specified. The museum's program of work, and the general policies of its conduct are thus not changed; by Miss Alexander's endowment they are now perpetuated.

The year just passed has witnessed a large increase in our store of scientific materials. There were 182 accessions, comprising a total of 11,114 separate specimens. The largest single accession consisted of the Grinnell collection of birds, numbering 8312 specimens. This was acquired by outright gift, and represents the field work of the donor from 1893 to 1907 inclusive. The collection contains twenty-seven types of new subspecies and many "record" specimens of especial value. There are also long series of birds gathered from appropriate territory to show facts in geographic variation.

*A list of gifts presented to the Museum of Vertebrate Zoology will be found on pages 196-200.

From Mr. A. Brazier Howell there was received the sum of \$50 for the purpose of buying scientific specimens such as might be needed in special studies under way. The most important single accession as a result of field work carried on directly under the auspices of the museum was from the Stikine River expedition, which traversed parts of Alaska and British Columbia. A total of 1196 specimens came in from this one source.

The number of catalogued specimens contained in the museum now totals 80,804. These are represented, by departments, as follows: mammals, 31,161; birds, 40,460; reptiles and amphibians, 7353; sets of birds' eggs, 1830.

Seven separate loans involving 1219 specimens were made during the year to institutions in the East; in addition, there were thirteen loans to local investigators totaling 171 specimens. One student of mammals, Mr. A. Brazier Howell, of Pasadena, spent the winter of 1919-20 in Berkeley to avail himself of the facilities offered by this museum in the study of certain groups. One result of his researches is the publication of a revision of the California forms of jumping mice of the genus *Zapus*.

The major field trip of the year was concluded on September 15, 1919, when H. S. Swarth, Curator of Birds, and Joseph Dixon, Economic Mammalogist, returned from four months' work in the Northwest. Starting from Wrangell, Alaska, they went direct to Telegraph Creek, British Columbia, and then returned by gradual stages down the Stikine River, collecting and studying en route. The problem directly in view was that of ascertaining the amount and nature of the differences obtaining between the coast fauna and the interior fauna in that region, and of finding where the boundary between these two faunas is located and how the species represented on either side behave at this critical point. The results are now being compiled by Mr. Swarth, to constitute a published report similar to the ones already contributed from the museum relative to other sections of southeastern Alaska and British Columbia.

During April and May, 1920, Joseph Grinnell, Professor of Zoology and Director of the Museum of Vertebrate Zoology, accompanied F. B. Sumner, Associate Professor and Biologist in the Scripps Institution for Biological Research, in field work in the Death Valley region of southeastern California. The immediate object was to secure specimens of the rodent genus *Peromyscus* from the floor of Death Valley in quantity sufficient for statistical treatment by Dr. Sumner in connection with his work in heredity and environmental influence. A further problem was undertaken, to be reported upon by Dr. Sumner, that of testing the colors of a certain kind of mouse found on a large area of black lava in comparison with the same species of mouse from an adjacent area of light colored rock. During the last part of this work Mr. Richard Hunt, Assistant Curator of Birds, accompanied Dr. Sumner in the interests of the museum. The expenses of the trip were defrayed from a special fund provided by Mr. E. W. Scripps.

In August, 1919, Miss Annie M. Alexander and Miss Louise Kellogg carried on collecting for the museum in the Sequoia National Park, southern Sierra Nevada. A total of seventy-four mammals and birds was obtained, including some species not heretofore known to occur in that region. A report upon this collection was filed with the Superintendent of the Park.

It has seemed desirable that the museum be represented as often as possible at general meetings of societies whose objects are related to the museum's own special field of interest. In pursuance of this policy, Mr. Swarth attended the annual congress of the American Ornithologists' Union in November, 1919, in New York City, and furthermore took the opportunity of visiting various eastern museums and of consulting libraries and collections bearing upon his studies here. Mr. T. I. Storer, Field Naturalist, attended the meeting of the Western Society of Naturalists (serving as secretary of that society) and of the Pacific Division of the American Association for the Advancement of Science, at Seattle, in June, 1920.

On December 1, 1919, the museum began an investigation of the fur-bearing mammals of California for the purpose of securing reliable information concerning the food, breeding habits and present numbers of these important animals. Because of the very great rise in the prices to be realized upon furs and the consequent great increase in the number of trappers in the state (4900 in the season of 1919-20, 2500 the season before), it seemed important to gather all possible facts usable in determining how large an annual catch might be safely taken without endangering the present breeding stock. Mr. Dixon, immediately concerned with this investigation, spent much time in the past winter visiting trappers in different parts of the state and in securing first-hand information relative to the fur-bearing mammals. He was able in particular to get important data relative to the beavers on the San Joaquin and Merced rivers and in regard to the foxes on San Clemente and Santa Catalina islands. Mr. Dixon is the author of a bulletin published in March, 1920, through the Experiment Station, College of Agriculture, on the "Control of the Coyote in California." In this contribution it is urged that coyotes in most parts of the state are not the unmitigated nuisance they have generally been considered. A saner attitude than that heretofore generally obtaining is the one here adopted, namely to treat the coyote as an asset and to rid any locality only of such *individual* coyotes as have developed the sheep-killing habit, just as with dogs. They should be recognized as valuable for the service they render in checking the increase in ground squirrels and pocket gophers; furthermore, because of the present high value of their furs, their own intrinsic worth is considerable when the animals are captured at the season when their pelts are prime, in midwinter, rather than at some other time of the year.

Mr. J. E. Law, Curator in Osteology, spent the summer of 1919 in the Chiricahua Mountains of Arizona, an exceedingly interesting area from a faunal standpoint. He is now at work upon the results of his field work there, which will embody consideration of the mammals, birds, reptiles, and amphibians. Professor Grinnell and Mr. Storer are continuing their study of the natural history of the Yosemite region. A preliminary list of the mammals and summer birds of the Yosemite Park occupies a part of the 1920 circular of information issued by the Department of the Interior.

The educational functions of the museum have been exercised perhaps more the last year than in any preceding year. Nearly all of the staff have participated in University teaching, in giving popular lectures, or in conducting field excursions. H. C. Bryant, Economic Ornithologist, has kept up his work under the University Extension Division with success even above that of last year. Courses were given in "Birds, mammals and reptiles of California," "Birds of California," and "Natural history of the Sierra Nevada." A total of 176 students was enrolled in these Extension classes. Furthermore, as a result of recommendations from outside sources, Dr. Bryant has undertaken during the summer months certain lines of nature work under the National Park Service. A daily "nature guide" program has been established the present summer in Yosemite Valley, the purpose of which is to develop and direct interest in the wild life which is so important an asset of national parks. It is found that vacationists are in a particularly receptive mood, this applying to both adults and children.

What the country now needs is a citizenry that can see clearly and interpret accurately. Natural history provides an excellent vehicle for the education of these faculties.

Respectfully submitted,

J. GRINNELL,
Director.

GIFTS TO THE UNIVERSITY

(GENERAL LIST)

Adams, Mrs. Leah Darcy, of Montebello, California, to the Southern Branch of the University, a three volume Documentary History of the Constitution of the United States, published by the Government Printing Office.

Alexander, Miss Annie, \$200,000 for the endowment of the California Museum of Vertebrate Zoology. Approximately \$11,000 during the year 1919-20 toward the budget of the Museum of Vertebrate Zoology. \$100 to the Museum of Vertebrate Zoology for the expenses of a representative on an expedition to Eastern Oregon. A collection of recent shells from the Hawaiian Islands to the Department of Palaeontology.

American Medical Association, \$400 for the maintenance of medical research conducted by Dr. H. M. Evans.

American Red Cross, Pacific Division, \$2400 in payment of the salary during the fiscal year 1920-21, for a Supervisor of Practice Work in the Department of Economics.

Anderson, Mrs. Elizabeth G., of Alameda, to the California Museum of Vertebrate Zoology, the Malcolm P. Anderson collection of scientific specimens of mammals and birds. Mr. Anderson, deceased, was a naturalist of some note who carried on field work in Asia for many years in the interests of the British Museum.

Associated Radiograph Laboratories, \$1200 for the year beginning January 1, 1920, for the maintenance of a research fellowship along the lines of radiographic work in connection with diseased teeth.

Bard, Mrs. Thomas R., Berylwood, Hueneme, California, the sum of \$62.50 for the Library of French Thought.

Booth, Mrs. Robina M., widow of the late Professor Edward Booth, the sum of \$200 for the establishment of a loan fund for men and women students of the University, to be called the Edward Booth Loan Fund.

Burns, Mrs. Sarah, \$125, being a refund of the amount which her son received as a scholarship from the University, which is used as a loan fund and known as the "John Burns Loan Fund."

California State Dental Association, \$465 for carrying on research in Dentistry, the fund to be known as the "California Dental Research Fund."

Debrian, Juan C., San Francisco, 480 volumes of Spanish and English books on science, art, history and other subjects.

Colburn, A. E., Los Angeles, to the Museum of Vertebrate Zoology, one adult male passenger pigeon.

Commission for Relief in Belgium, Fellowship Committee, two exchange graduate fellowships for the academic year 1920-21.

Congregation Emanu-El of San Francisco, \$100 for the American School of Oriental Research in Jerusalem.

Crocker, Mr. and Mrs. Wm. H., San Francisco, \$1000 each for the support of the work at the branch of the Lick Observatory maintained at Santiago, Chile.

Crocker, Mr. Wm. H., \$10,000 toward the purchase of radium for experimental work at the University Hospital.

Dowell Estate, Ernest V., \$250,000 for the construction of a gymnasium.

Day, Mrs. Clinton, to the School of Architecture, books, pamphlets and photographs from the collection of her husband, the late Clinton Day.

Diers, Peter M., Berkeley, to the University Library, volumes 34 and 35 of the Quarterly Journal of the Geological Society of London.

Diester Machine Company of Fort Wayne, Indiana, a small concentrating table, known as the Plat-O-Table.

DuPont de Nemours & Company, \$750 in support of the DuPont Fellowship for the academic year 1919-20.

Friend of the University, \$226.50, to be added to the fund for the purchase of an ambulance for the Infirmary.

Friend of the University, \$370.44 toward the purchase of an ambulance for the University Infirmary.

Friend of the University, \$5000 for the support of special research work in the Department of Palaeontology.

Friend of the University, a new L. C. Smith typewriter to the Department of Chemistry.

Friend of the University, to the Music Department, six large framed portraits of Bach, Beethoven, Mozart, Mendelssohn, Chopin, and Liszt.

Gumble, John, Oakland, several volumes from his private library, to the University Library.

Godrich, Mrs. E. E., and Dr. Janet Perkins, Berkeley, a portrait of Field Marshal Foch, painted by Sir William Orpen, to the Library of French Thought.

- Grinnell, Dr. Joseph, to the California Museum of Vertebrate Zoology his entire private collection of scientific study-skins of birds.
- Hatfield, Professor H. R., \$212.10, being the amount of expenses in attendance at a meeting of the Association of University Schools of Business at Cambridge, Massachusetts. The Association reimbursed Professor Hatfield and he endorsed the check to the University.
- Hearst, Mrs. Phoebe A., \$6000 originally bequeathed to Professor Rudolph Schevill, to be expended to complete the publication of the works of Cervantes, and placed by him in trust with the Regents. Also a bronze portrait bust of Mrs. Hearst.
- Hindu, unknown, a former student of the University, \$15 for the purchase of books for the University of California Library.
- Howell, Mr. A. Brazier, Pasadena, \$50 to the Museum of Vertebrate Zoology, for the purpose of buying scientific specimens such as may be needed in research work.
- Horgan, James C., two-thirds of the net income of his estate (amounting to approximately \$2000 per year) for the promotion and development of agriculture, and particularly the work of the University Farm at Davis.
- Howison Lectures in Philosophy: The following friends of Professor George Holmes Howison have given the sum of \$6371 for a lectureship as a memorial to him: Charles M. Bakewell, Charles H. Bentley, Ralph P. Merritt, Sidney E. Mezes, James K. Moffitt, Charles H. Rieber, and George M. Stratton.
- Hyman, Dr. Sol, San Francisco, a graduate of the University, four framed photographs, two of Professor Joseph LeConte taken in his office in South Hall, and two of the LeConte Oak.
- Irving, S. C., Berkeley, the official flag of the United States School of Military Aeronautics, formerly located at the University of California.
- Kidder, Mrs. Anna W., to the School of Architecture, a number of books pamphlets, photographs and plates which formerly belonged to the library of the Rev. Joseph Worcester, of San Francisco.
- Krebs, Dr. L. L., of Pasadena, to the Museum of Vertebrate Zoology, his collection of scientifically prepared skins of birds native to the Philippine Islands.
- LeConte Fellowship: The receipt of the following sums to be used in augmenting the LeConte Fellowship: \$200 from Mr. W. E. Creed, \$200 from Regent P. E. Bowles, \$50 from Mr. J. D. Fletcher, '07, \$50 from Mr. Farnham P. Griffiths, '06, \$50 from Mr. Prentiss N. Gray, '06, \$50 from Mr. George L. Bell, '09.

Lemon Men's Club, \$3,500 annually, for a period of three or more years, for the scientific study of the causes and methods of control of the internal decline of lemons.

Leslie Estate, George Darby, approximately \$27,000 for the establishment of the "Elsie Leslie Scholarship for Widow's Sons."

Mead, Dr. Elwood, to the Department of Anthropology, a collection of Australian spears and other weapons.

Mexican Geological Survey, a collection of fifty rocks illustrating Mexican geology.

Ministry of Finance of the Republic of France, a very fine collection of modern French and German implements of warfare.

Moffitt, Mr. James K., San Francisco, a law library numbering approximately 2000 volumes.

Naffziger, Dr. Howard C., \$1200 for a fellowship in Neuro-Surgery in the Medical School, for the year 1920-21.

National Cannery Association, \$24,000 a year for two years, in support of an investigation to be conducted jointly by the Medical School of Stanford University and the Hooper Foundation in connection with poisoning from canned goods due to bacillus botulinus.

Nutting, Franklin P., \$100 for the purchase of accounting books for the University.

Oddie, Sarah S., Teaching Fellow in Public Speaking, the sum of \$50 for the Department of Public Speaking.

Panhellenic Union in America, \$100 for the support of a student in the College of Agriculture.

Preble, Mrs. F. C., Oakland, \$150, for the establishment of the Florence Preble Baker Memorial Scholarship for the academic year 1920-21 in memory of Mrs. Preble's daughter, Mrs. Florence Preble Baker, a graduate of the University with the class of 1901.

Putnam, Miss Elizabeth Whitney, San Francisco, 198 miscellaneous volumes and 16 pamphlets.

Rosenberg, Linda and Joseph, \$57.50 per month for the period of twenty years for the establishment of the James Rosenberg Memorial Scholarship, the sum mentioned being the amount due from an insurance policy written by the government on the life of James Rosenberg, who died in France in the service of his country.

San Francisco District Dental Society, \$250 to be added to the Dentistry Research Fund.

Shoenfeld, Mrs. Jeremiah, San Francisco, to the University's Anthropological Museum, nineteen specimens chiefly from the South Sea Islands, China, and North America.

- Searles, Edward F., 25,000 shares of the capital stock of the Pacific Improvement Company, valued at approximately \$1,500,000. Also an additional gift of stocks valued at approximately \$50,000.
- Seligman, E. R. A., of Columbia University, a year's subscription to the entire service of the Bankers' Statistics Corporation, and a copy of his work, "Curiosities of Early Economic Literature."
- Seligman, Mrs. Isaac N., New York City, a set of the Journals of Washington Irving, privately published by the Bibliophile Society, of Boston, and printed from manuscript in the collection formed by the late Isaac N. Seligman.
- Singh, Mr. Ishwar, of Walnut Grove, California, the sum of \$35 to be applied to the Hindustani Foreign Scientific Education Loan Fund.
- Southern Pacific Company, twenty-four annual passes on lines in California for members of the Department of Agriculture and ninety-one half-fare permits for members of the Departments of Agriculture, Anthropology, Education, Scripps Institution for Biological Research and University Extension Division.
- Smith, Mrs. John, of Los Angeles, the sum of \$250 for the purchase of books for the physicians on the staff of the University Infirmary.
- Smith, Mrs. James B., of Burlingame, ten rare botanical books, of a value of approximately \$225.
- Storms, Miss Murial Helen, of Berkeley, to the College of Mining, 160 volumes dealing with mining and metallurgy, which constituted the technical library of her father, Wm. H. Storms, formerly State Mineralogist of California.
- Swedish-American Patriotic League of California, Inc., \$125 for the maintenance of the scholarship of that league for the academic year 1919-20.
- Taussig, Rudolph J., \$625 toward the travelling expenses of Dr. Laurence R. Taussig on a trip to Pittsburgh in connection with the purchase of radium for the University Hospital; also \$1000 toward the purchase of radium for experimental work at the University Hospital.
- Temple Emanu-El of San Francisco, offered the Emanu-El schoolhouse to the Extension Division of the University for the use of its classes.
- Thury, Miss M. S., Berkeley, to the Library of French Thought, a copy of the "Mona Lisa" and a copy of "Rouget de Lisle singing the Marseillaise."
- United States Interdepartmental Social Hygiene Board, \$3875 for research in connection with venereal diseases.
- University Mothers' Club, a silken regimental color and staff for the use of the University of California Infantry Unit, Reserve Officers Training Corps.

University Extension Course, \$1800 for the support of a University Extension course, "Intensive Training Course for Social Workers," from the following residents of Los Angeles: Messrs. Maurice S. Hellman, Arthur Letts, George I. Cochran, Lee Phillips, Willis D. Longyear, Harry Chandler, Dr. John R. Haynes, James Slauson, and Mrs. Joseph F. Sartori.

University of Paris, a bronze medal in recognition of the University's service in the great war.

Voorsanger, Dr. E. C., to the University Library, the bulk of the private library of his father, Dr. Jacob Voorsanger, consisting of some 1850 volumes.

Wall, Mr. E. W., to the Department of Palaeontology, collection of recent shells from Central and South America.

Waterman Company, L. W., San Francisco, a set of photographs of the delegates to the Peace Conference at Versailles, Conference Room, seating plan of the delegates at the Peace table, which have been placed in the Library for display.

Webber, Dr. H. J., Professor of Plant Breeding and Director of the Agricultural Experimental Station, 26 volumes of the Botanical Gazette for the year 1889 to 1905. Also specimens of fungi which cause the destruction of certain scale insects on citrus trees, collected by Dr. Webber in Florida.

Williams, Mrs. Evan, San Francisco, \$250 for the establishment of a scholarship in memory of her daughter, Enid Williams, to be known as the "Enid Williams Memorial Scholarship in Music." Also a valuable collection of music and books relating to music, formerly the property of her daughter, and \$100 for the purchase of musical scores, has been presented to the Library with the request that the collection be known as the "Enid Williams Memorial."

Williams, Messrs. Gardner F., E. L. Oliver, C. W. Merrill, B. T. Thane, Charles Butters, Stanley A. Easton, C. B. Lakenan, F. W. Bradley, and Frank H. Probert, \$225 for the purchase of a silver tablet suitably engraved and mounted on oak base, designed as a perpetual challenge trophy for annual California mine rescue and first aid contests.

Wheeler, Benjamin Ide, to the University Library, some 370 bound books, and 128 unbound pamphlets and reports from his private library on philological subjects.

Whittell, Mr. George, Jr., \$5000 toward the cost of radium element purchased by the University Hospital.

GIFTS TO THE HERBARIUM, BOTANICAL MUSEUM, AND
BOTANICAL GARDEN

TO THE HERBARIUM

- Bettys, Mrs. J. A., San Benito, 1 sheet of *Eriogonum fasciculatum*.
- Blasdale, Professor W. C., University of California, 1 sheet of *Puccinia yosemitana* Blasdale, from the Yosemite.
- Brandege, Mr. and Mrs. T. S., University of California, 13 sheets of lichens.
- California Academy of Sciences, San Francisco, courtesy of Miss Alice Eastwood, 2 sheets of a new species of *Chrysothamnus* and 1 sheet of *Armica venosa*.
- Carnegie Institution of Washington, through the courtesy of Dr. H. M. Hall, 132 sheets of plants including sets for distribution of *Artemisia parishi* and *Chrysothamnus paniculatus*.
- Chipp, Major T. F., Botanic Gardens, Singapore, 8 sheets of phaenogams from the Malay Peninsula, 15 from the Malay Peninsula through Professor Metcalf from the same collection.
- Collins, F. S., North Eastham, Mass., 1 sheet of *Codium latum* from the herbarium of Professor D. C. Eaton, Yale University, 67 sheets of marine algae *Codium*.
- de Angulo, Jaime, Angulo Ranch, S. of Posts, Santa Lucia Mountains, 1 sheet of *Quercus wizlizenii*, through Dr. W. L. Jepson.
- Evans, Professor Herbert M., University of California, 282 sheets of phaenogams collected in the high Sierras.
- Fowler, Charles Gaylord, and Mary Fowler Lynch for Mrs. Martha Gaylord Fowler, Berkeley, 40 sheets of phaenogams collected in Scotland, 283 sheets of algae collected in Alaska.
- Gray Herbarium of Harvard University, Cambridge, Mass., 1 sheet of *Erigeron confinis* collected in Oregon by J. C. Nelson.
- Griffen, Miss Alice L., Monterey, 2 sheets of Phaenogams *Acacia* and *Eucalyptus*.
- Hall, Dr. and Mrs. H. M., Berkeley, 105 sheets of plants, including 35 ferns and sets for distribution of *Arctostaphylos andersoni* and *Dirca occidentalis*. See also under Carnegie Institution of Washington.
- Henkel, Fred, Los Angeles, 1 sheet of *Ruppia maritima* from Venice.
- Jepson, Professor W. L., University of California, 25 ferns and other cryptogams.
- Johnston, Ivan M., U. C. '21, Uplands, 468 sheets of phaenogams from San Antonio Mountains, and 52 cryptogams.
- Millspaugh, Dr. C. F., Field Museum of Natural History, Chicago, Illinois, 78 sheets from Catalina Island and San Diego County, mostly ferns and compositae.
- Parish, S. B., Berkeley, an herbarium of plants consisting of 2757 sheets of phaenogams and 222 sheets of pteridophytes.
- Parks, Harold E., San Jose, 12 sheets of Cotyledons from Los Gatos.

- Petersen, N. F. University of Nevada, Reno, 7 sheets of phaenogams from Nevada.
- Rose, Mrs. C. F., Carrville, Trinity County, 2 sheets of phaenogams.
- Rose, Lewis S., '17, San Francisco, 19 sheets of flowering plants from New Mexico.
- Skotsberg, Dr. Carl, Sweden, and Dr. W. A. Setchell, University of California, 28 specimens algae collected by the Swedish Antarctic Expedition, 1901-02.
- Setchell, Professor W. A., University of California, 1 sheet of *Puccinia robusta platyphylla* from Montara.
- Vyckoff, Mr. Stephen N., 1 sheet of *Puccinia antirrhinum*.

TO THE BOTANICAL MUSEUM

- Whipp, Major T. F., Botanic Gardens, Singapore, 9 specimens of wood from the Malay Peninsula.
- Wasson, W. J., Celite Products Company, Lompoc, 1 specimen of fossil alga.
- de Angulo, Jaime, Angulo Ranch, S. of Posts, Santa Lucia Mountains, 1 section from trunk of *Quercus wislizenii*, through Dr. W. L. Jepson.
- Hall, Dr. H. M., University of California, Berkeley, silk from *Asclepias mexicana*.
- Johnston, I. M., University of California, '21, Uplands, 121 specimens of fungi from Colorado.
- Parks, Harold E., San Jose, 1 specimen of *Boschmikia strobilacea*.
- Pearson, James, Pasadena, 4 specimens of Lycopodium.
- Ramos, J. D., Los Angeles, pods and leaves of *Cryptostegia grandiflora*, from the Cape region of Lower California.

TO THE BOTANICAL GARDEN

- Tabcock, Professor E. B., University of California, seed collected by H. P. Chandler and others in different places; 17 packages.
- Salic, Joseph, Kirin, Manchuria, through Professor C. W. Woodworth, University of California, 27 packages of seeds.
- Hall, Dr. H. M., Carnegie Institution of Washington, 6 packages of seeds.
- Kennedy, Professor P. B., University of California, 1 package of seeds.
- Parks, Harold E., San Jose, 5 bunches of Cotyledons, and 1 of Sedum, from Guadaloupe Creek and Mines.
- Tracy, Joseph P., '03, Eureka, 5 packages communicated by Dr. H. M. Hall, University of California.
- Walker, Miss Harriet A., University of California (morning glory) *Ipomoea purpurea*, 1 package of seeds.

GIFTS TO THE DEPARTMENT OF ZOOLOGY

July 1, 1919, to June 30, 1920

- Brown, A. A., San Francisco, one annelid commonly known as the pile worm or lug worm belonging to the genus *Glycera*, found on rotten submerged log near Marin Island N. Point San Quentin.
- Collam, R., U. S. G. S., through the courtesy of Emanuel Fritz (Division of Forestry, College of Agriculture), abnormal wing bones of an unnamed duck.
- Cort, Professor W. W., Johns Hopkins University, eight vials of miscellaneous parasites.
- Dodds, C. T., Berkeley, one sting from sting ray collected at Auckland, New Zealand, 1878.
- Southern Pacific Railroad Co., Fort Custer, four specimens of *Teredo nevalis*.
- Sumner, Professor F. B., La Jolla, a quartette of armidillo embryos.
- Ward, Dr., Fabiola Hospital, Oakland, one nine-weeks human foetus.

GIFTS TO THE CALIFORNIA MUSEUM OF VERTEBRATE ZOOLOGY

July 1, 1919, to June 30, 1920

NOTE.—This list does not include specimens secured by collectors normally employed from the endowment fund or from other funds provided by Miss Annie M. Alexander for the maintenance of the Museum, nor does it include a number of accessions received by purchase out of the same fund.

The term "mammal" as here used ordinarily means a dry study-skin plus the cleaned skull belonging to the same individual; not infrequently a complete skeleton is involved, and sometimes the entire animal preserved in alcohol. A "bird" is usually a dry study-skin, sometimes a partial or complete skeleton. A "set of eggs" is the total number of eggs found in a bird's nest, often accompanied by the nest itself. A "reptile" or "amphibian" is the entire animal preserved in alcohol.

Localities are in California unless otherwise specified.

- Alexander, Miss Annie M., 1 Hawaiian rat; bones of small bird, from Volcano House, Hawaii.
- Alexander, Miss Annie M., and Kellogg, Miss Louise, 52 mammals, 22 birds, 1 reptile, from Giant Forest and Twin Lakes, Sequoia National Park.
- Allen, Mrs. Amelia S., 1 western yellow-bellied racer (*Coluber c. vetustus*), 1 sooty fox sparrow (*Passerella i. fuliginosa*), 1 red-shafted flicker (*Colaptes c. collaris*), all from Berkeley.
- Anderson, Mrs. Elizabeth G., 161 mammals, 9 birds, from California and foreign countries (collected by the late Malcolm P. Anderson).
- Audubon Society of the Pacific, 1 whistling swan (*Olor columbianus*), 1 short-billed gull (*Larus brachyrhynchus*), from Lake Merced, San Francisco.
- Badé, Dr. Wm. F., 1 dusky warbler (*Vermivora c. sordida*), from Berkeley.
- Bailey, Bernard, 9 bats (*Myotis l. carissima*), from Corvallis, Montana.
- Bassett, Frank N., 1 Pacific blue-bellied lizard (*Sceloporus o. occidentalis*), from Redwood Canyon, Alameda County.

- Bassett, F. N., and Bryant, Dr. H. C., 1 California pine grosbeak (*Pinicola e. californica*), from Grass Lake, Eldorado County.
- Bishop, Dr. L. B., 1 Alaska langspur (*Calcarius l. alascensis*), from Eureka, Humboldt County; 1 chestnut-sided warbler (*Dendroica pensylvanica*), from Sherwood, Mendocino County.
- Blake, Mrs. A. W., 1 California yellow warbler (*Dendroica a. brewsteri*), from Berkeley.
- Brooks, Major Allan, 4 skulls of mammals (*Mustela haidorum*), 4 north-western toads (*Bufo boreas*), 6 birds (*Puffinus tenuirostris*, *Micropalama himantopus*, *Helodromas s. solitarius*, *Ereunetes pusillus*), from British Columbia.
- Bryant, Dr. H. C., 6 birds (*Astragalinus p. hesperophilus*, *Passer domesticus*, *Pyromelana franciscana*); also skeletons and skulls of several species of birds, 1 muskrat skull (*Fiber z. pallidus*), 1 alligator lizard (*Gerrhonotus*), 1 leopard frog (*Rana pipiens*), from Berkeley, Eldorado County, and Salton Sea.
- Buckley, Miss Betty, 1 four-legged domestic chicken.
- California Academy of Sciences, 3 long-toed salamanders (*Ambystoma macrodactylum*), from Crater Lake, Oregon.
- Camp, Lieut. Chas. L., 1 mink (*Mustela* sp.), from San Gabriel Mountains, Los Angeles County.
- Carriger, Henry W., 1 northern spotted owl (*Strix o. caurina*), from San Geronimo, Marin County; 1 mountain quail (*Oreortyx picta*), from near Santa Rosa, Sonoma County.
- Carriger, H. W., and La Jeunesse, H. V., 6 skeletons of birds, from near Livermore, Alameda County.
- Clarke, Mrs. Frank C., 1 western crow (*Corvus v. hesperus*), from Laytonville, Mendocino County.
- Clarke, F. C., 38 deer antlers (*Odocoileus c. columbianus*), 1 coyote (*Canis o. ochropus*), 1 sharp-shinned hawk (*Accipiter velox*), all from Laytonville, Mendocino County.
- Clark, W. V., 1 red-tailed hawk (*Buteo b. calurus*), from Laytonville, Mendocino County.
- Colburn, A. E., 1 passenger pigeon (*Ectopistes migratorius*), from Neosho Falls, Kansas, taken in 1875.
- Cooke, Mrs. A. W., 1 whistling swan (*Olor columbianus*), from Imperial.
- Coolidge, Mrs. Mary Roberts, 1 skull of bobcat (*Lynx*), 1 skull of Mohave desert kit fox (*Vulpes m. arsipus*), 1 Pacific pallid bat (*Antrozous p. pallidus*), 1 magpie (*Pica p. hudsonia*), all from Death Valley, Inyo County.
- Crispin, Chas. A., 1 Asiatic dipper (*Cinclus pallasi*), 1 white gyrfalcon (*Falco islandus*), from Korea.
- Davis, Mrs. H. P., 1 mockingbird (*Mimus p. leucopterus*), from Knight's Ferry, Stanislaus County.
- Dietrich, H., 4 reptiles and 15 amphibians, from Northfork, Madera County, and Berkeley hills in Contra Costa County.
- Dixon, Joseph, 1 skeleton of brown towhee (*Pipilo c. crissalis*), 2 slender salamanders (*Batrachoseps attenuatus*), from Berkeley; 1 Nelson pied lemming (*Dicrostonyx rubricatus*), from Griffin Point, Arctic Alaska.
- Drobish, H. E., 1 sharp-tailed snake (*Contia mitis*), from Oroville, Butte County.

- Ellis, S. L. N., 15 skulls of beaver (*Castor subauratus*), from near Mendota, Fresno County.
- Emerson, W. O., 1 hoary bat (*Nycteris cinerea*), 4 opossums (*Didelphis virginiana*), from Hayward, Alameda County.
- Emmel, Dr. V. E., 5 larvae of slender salamander (*Batrachoseps attenuatus*), from Berkeley.
- Ferriss, J. H., 1 chipmunk (*Eutamias hopiensis*), from Navajo County Arizona.
- Finley, William L., 2 wolf skulls (*Canis*), from Foster Oregon.
- Geiselhart, Miss Josephine, 1 tiger salamander (*Ambystoma tigrinum*) 2 Pacific blue-bellied lizards (*Sceloporus occidentalis*), 10 birds of various species, all from vicinity of Concord, Contra Costa County.
- Graham, R. J., 2 limb bones of deer (*Odocoileus c. columbianus*), from near Wendling, Mendocino County.
- Gray, A. E., 3 ground squirrels (*Citellus mollis*), from Honey Lake, Lassen County.
- Grinnell, Prof. J., 8312 bird skins (entire private collection, chiefly from California and Alaska); 1 California brown towhee (*Pipilo c. crissalis*), 1 yellow warbler (*Dendroica aestiva*), from Moraga Valley, Alameda County.
- Grinnell, Miss Mary E., 1 canary, from Berkeley.
- Grinnell, S. W., 1 dwarf hermit thrush (*Hylocichla g. nanus*), from Claremont Canyon, Berkeley.
- Grinnell, Willard, 1 central California mole (*Scapanus l. latimanus*), 3 California jays (*Aphelocoma c. oocleptica*), 1 Vigors wren (*Thryomanes b. spilurus*), from Wildeat Canyon and Moraga Valley, Alameda County.
- Hagedoorn, A. L., 1 Pacific horned owl (*Bubo v. pacificus*), 1 dusky-footed wood rat (*Neotoma f. fuscipes*), from Berkeley.
- Hall, Ansell F., 1 corral king snake (*Lampropeltis p. multicincta*), from Yosemite Valley, Mariposa County.
- Hands, F. H., 2 mammals (*Perognathus* and *Dipodomys*) 1 entire deer, 1 part skeleton and shed horns of deer, 3 bird skeletons, 5 reptiles and amphibians, from Pinery Canyon and Apache Pass Draw, Cochise County, Arizona.
- Hanna, W. C., 1 ring-necked snake (*Diadophis amabilis*) from Colton, San Bernardino County.
- Heger and Harris Bird Store, Oakland, 5 foreign birds.
- Hoffman, Ralph, 1 Alaska hermit thrush (*Hylocichla g. guttata*), from Santa Cruz Island; 1 cowbird (*Molothrus a. obscurus*), from Goleta, Santa Barbara County.
- Holden, Capt. F. H., 21 mammals, 8 birds, from vicinity of Berkeley.
- Howell, A. Brazier, 24 mammals, 3 amphibians, from northwest coast of California and southern Oregon.
- Jacobsen, W. C., 1 albino pocket gopher (*Thomomys b. pascalis*), from Merced, Merced County.
- Krebs, Dr. L. L., 86 birds, from Mindanao and Luzon, Philippine Islands.
- Lathrop, R. A., 1 skull of deer (*Odocoileus hemionus*), from near Springville, Tulare County.
- Law, Mrs. J. Eugene, 1 California alligator lizard (*Gerrhonotus scincicauda*), from Stanford University.

- Law, J. Eugene, 3 reptiles, 12 mammals (with 4 complete skeletons), 6 birds (*Gavia immer*, *Larus californicus*, *Larus delawarensis*, and *Rhynchopsitta pachyrhyncha*), from southern California and Chiricahua Mountains, Arizona.
- McLean, Donald D., 1 western marsh wren (*Telmatodytes p. plesius*), and 1 kangaroo rat (*Dipodomys*), from near Coulterville, Mariposa County; 5 birds (*Loxia c. minor*, *Stellula calliope*, *Selasphorus rufus*, *Colaptes a. auratus*, *Melospiza l. striata*), nest and set of eggs of olive-sided flycatcher (*Nuttallornis borealis*), 5 mammals (*Reithrodontomys*), from vicinity of Berkeley.
- McLean, Mrs. John L., 1 Pacific horned owl (*Bubo v. pacificus*), from near Coulterville, Mariposa County.
- Miller, Dr. L. H., 1 Kaeding petrel (*Oceanodroma kaedingi*), from ocean off San Diego; 1 summer tanager (*Piranga r. rubra*), 1 cottontail rabbit (*Sylvilagus*), from Los Angeles County; skeleton of Sierra least weasel (*Mustela muricus*), from Fallen Leaf Lake, Eldorado County.
- Moffitt, James, 1 Sierra Nevada flying squirrel (*Glaucomys s. lascivus*) and 2 Oregon snowshoe rabbits (*Lepus w. klamathensis*), from near Tahoe City, Eldorado County.
- Moran, Robert B., 1 Merriam turkey (*Meleagris g. merriami*), from Greer, Arizona.
- Neale, Geo., 6 birds (*Olor columbianus*, *Mergus americanus*, *Nettion carolinense*), 1 beaver (*Castor*), from American River and Sutter County.
- Neville, L. S., 3 Mohave ground squirrels (*Citellus mohavensis*), from Palmdale, Los Angeles County.
- Noack, H. R., 5 foreign birds (*Lophophaps leucogaster*, *Calvenas nicobarica*, *Foudia madagascariensis*, *Oena capensis*, *Chalcopelia afra*).
- Nokes, Dr. Irwin D., 1 scissor-tailed flycatcher (*Muscivora forficata*), from near Boquet Canyon, Los Angeles County.
- Oliver, A., 5 hawks (*Buteo l. sancti-johannis*, *Circus hudsonius*, *Falco mexicanus*), from near Firebaugh, Fresno County.
- Palmer, R. H., 1 southern black-tailed deer (*Odocoileus c. scaphiotus*), from Alameda County.
- Pemberton, J. R., 1 white-throated sparrow (*Zonotrichia albicollis*), from Petaluma, Sonoma County; 1 eastern fox sparrow (*Passerella iliaca*), from Big Sur River, Monterey County.
- Pierce, Wright, M., 2 Bohemian waxwings (*Bombycilla garrula*), from Claremont, Los Angeles County.
- Quayle, Prof. H. J., 1 silvery footless lizard (*Anniella p. pulchra*), from West Riverside, Riverside County.
- Ricardi, O. A., 1 albino gopher (*Thomomys bottae*), from Daly City, San Francisco County.
- Robison, A. W., 3 foreign birds.
- Storer, T. I., larval and young amphibians (*Bufo h. halophilus* and *Rana boylei*), from Manor, Marin County; 1 Sierra junco (*Junco o. thurberi*), from Berkeley.
- Thomas, C. R., 1 dark-bodied shearwater (*Puffinus griseus*), from beach near Golden Gate Park, San Francisco.
- Townsley, F. S., 2 mallard ducks (*Anas platyrhynchos*), from Yosemite Valley, Mariposa County.

- Wear, Miss Winifred N., nest of Arizona hooded oriole (*Icterus c. nelsoni*), from Fresno.
- White, H. G., 1 Pacific coast newt (*Notophthalmus torosus*), from Berkeley.
- Willett, George, 15 mammals (mink and weasel), 5 ptarmigan (*Lagopus l. alexandrae*), from Prince of Wales Island and Suemez Island, southeastern Alaska.
- Zeile, Miss E. M., 1 California pocket gopher (*Thomomys b. bottae*), from Berkeley.

GIFTS TO THE UNIVERSITY FARM

- Horgan, James C., Estate of, a check for \$1070.30 to be used for the promotion and development of agriculture, and particularly the work of the University Farm at Davis.
- Miller, Fred, Alameda, English oak acorns and some horse chestnuts, sent by Fannie Caley, from Bushy Park, Hampton Court, Surrey, England.

DAIRY INDUSTRY DIVISION

- Buehrer, E. C. Co., San Francisco, one Barrett lift truck, an important labor-saving equipment for handling heavy articles in a factory; manufactured by E. Cravens Co., Chicago.
- Elyria Products Co., Elyria, Ohio, one 50-gallon glass enameled Elyria pasteurizer, steel jacket; an apparatus of durable construction and very desirable for handling dairy products on account of its non-metallic surface.

IRRIGATION DIVISION

- California Corrugated Culvert Co., West Berkeley, one Lyman irrigation meter for use in connection with 18-inch Cipolletti weir; one Lyman irrigation meter for use in connection with 24-inch rectangular weir; one Lyman irrigation meter for use in connection with 5 ft. × 5 ft. submerged orifice.

PHYSICAL EDUCATION

- National War Council, Y. M. C. A., the sum of \$108 with which to buy Rugby football uniforms for Australian soldiers.

POMOLOGY DIVISION

- Acme Ladder Co., Los Angeles, one fruit picking ladder.
- Bausch & Lomb, San Francisco, two carbons for photomicrographic outfit.
- Brown, Alfred L. Nursery Co., Santa Clara, four French prune trees and four Myrobalan seedlings.
- Cox, A. B., California Ranch, Helena, Miss., one pecan tree.
- General Chemical Co., San Francisco, 25 lbs. B. T. S. (dried sulphur compound).
- Glidden Co., San Francisco, 50 lbs. lime sulphur.
- Kadota Fig Orchard, Sultana, six Kadota fig trees.
- Regal Pruner Co., Salem, Oregon, one pole pruner.
- Ruehl-Wheeler Nursery Co., two Los Gatos peach trees, two Palaro peach trees, two Los Gatos plum trees.

Sharpe, M., Vacaville, two Wickson seedling plums, two Clairgeau seedling pears, two Gout Spanish pears.

POULTRY DIVISION

Little Giant Egg Tester Company of Conejo, an electric egg tester.

Reliable Incubator Company of Quincy, Illinois, two complete chick hovers and five complete heaters for brooding chicks.

VETERINARY SCIENCE DIVISION

Spencer, Dr. H. A., San Jose, one mounted skeleton of a Shetland pony, one mounted skeleton of a dog, a quantity of valuable osseus pathological specimens.

Volz, Chas. A., Oakland, one osseus pathological specimen of a pelvis of a cow.

GIFTS TO THE DIVISION OF FORESTRY

Bishop, Mrs. S. A., Berkeley, collection of 21 pieces of fourteen species of woods of Brazil; also specimen of Para rubber from Brazil, native Brazilian weapon of wood, wooden shoes and photographs of Brazilian forests.

Boas, I., Perth, West Australia, 15 specimens of wood of Australian eucalyptus.

California Barrel Co., San Francisco, two half-sections of oil barrels, made of California Douglas fir.

Dahlgren, C., Ely, Minn., collection of seven laboratory specimens of woods of the Lake states.

Douglas Fir Lumber Co., and Bridal Veil Lumber Co., Portland, Ore., one plank of Noble fir.

Gillespie, T. J., San Jose, specimen board of eucalyptus.

Hall, Ansel F., Berkeley, Rules and regulations, Sierra Flume and Lumber Co., 1867.

Hall, Ansel F., and Ryerson, Knowles A., Berkeley, 28 colored lantern slides of French forests, complete set of sectional topographic maps of France, other miscellaneous maps and 25 French books and pamphlets bearing on forestry.

Maze, W. H. & Co., Peru, Illinois, 5-lb. carton of Trinclad shingle nails.

Neilson, N., Commissioner of Australia to Panama-Pacific International Expedition, three treatises on forestry in Australia, comprising 13 volumes.

Ryerson, Knowles A., Berkeley, six French books on forestry.

Susaeta, Elandio, Chili, collection of 21 hand specimens of woods of Chili.

Warren, M. C., Arcata, specimen of Douglas fir with imbedded telephone insulator and bracket.

Wyman, Lenthall, State College, Texas, specimens of petrified and green mesquite wood.

Schocke, Mrs. N., Palo Alto, one large wooden bowl, a native utensil of Philippine mahogany.

LECTURES AND ADDRESSES

SUMMER SESSION, 1919

AGRICULTURE DEPARTMENT LECTURES

Thomas Forsyth Hunt, Dean of the College of Agriculture and Director of the Agricultural Experiment Station:

July 7—France and England Compared.

July 8—The Devastated Area.

July 9—After-the-War Problems in England.

July 10—The Future Agricultural Needs of Our Allies.

July 11—American Agriculture after the War.

CRIMINOLOGY LECTURES

(In conjunction with the Sixth Annual Meeting of the International Association of Identification Experts)

E. O. Heinrich, Consulting Expert in Criminal Investigation, Lecturer in Criminology:

Aug. 7—The Camera Applied to Criminal Investigation.

A. M. Kidd, Professor of Law:

Aug. 7—The Right to Take Photographs, Measurements, and Fingerprints in Criminal Cases.

MISCELLANEOUS LECTURES

Annette Abbott Adams, United States Attorney for the Northern District of California:

Aug. 7—Criminal Procedure in the Federal Court.

David Prescott Barrows, Professor of Political Science and Lieutenant-Colonel, U. S. A.:

July 14—An American Officer in Siberia.

Louise Bartlett, Mayor of the City of Berkeley:

Aug. 5—The Newer Justice.

Charles Cestre, Professor of American Literature and Civilization, University of Paris:

Series of lectures throughout the session on Walt Whitman.

July 22—La France et les Etats-Unis en Face des Problemes de la Paix.

Victor S. Clark, member of National Board for Historical Service; Chairman Committee of Economic Studies of the Carnegie Foundation:

July 22—Conditions in Germany during the Last Year of the War.

July 24—Conditions in Germany during the Armistice.

Alfred Coester, Author of "A Literary History of Spanish America":

July 15—A Recent Literary Movement in the Argentine Republic.

Ludwik Ehrlich, Lecturer in Political Science:

July 29—The Covenant of the League of Nations: an Analysis.

George E. Hale, Director of the Mount Wilson Solar Observatory:

July 7—Work for the Amateur Astronomer.

Julia Heinnehan, Head of California House, Aldwych, London, England:

Aug. 7—War Work of the Women of the Allied Countries.

Clark W. Hetherington, State Supervisor of Physical Education:

Aug. 4—Requirements and Interpretation of the State Law in Physical Education.

Samuel J. Hume, Assistant Professor of Dramatic Literature and Art,
Director of the Greek Theatre:

Aug. 4—Modern Stage Decoration.

J. A. Johnston, Warden, State Prison, San Quentin:

Aug. 4—Modern Penology.

Alicia M. Keyes, Lecturer at the Museum of Fine Arts, Boston:

July 21—"Whistler."

Lillian J. Martin, Emeritus Professor of Psychology, Stanford University,
and President of the Mental Hygiene Society of California:

July 23—The Practical Application of the Principles of Mental Hygiene to Modern Social Problems.

Eugen Neuhaus, Assistant Professor of Decorative Design:

Aug. 4—The Painters of California.

Arthur J. Ritter, Lecturer on Mental Deficiency, Stanford University:

July 22—Mental Deficiency.

William T. Sedgwick, Professor of Biology and Public Health, Massachusetts Institute of Technology; Assistant Surgeon-General, Reserve,
U. S. Public Health Service:

July 8—Public Health—Yesterday, Today, and Tomorrow.

William Milligan Sloane, Seth Low Professor of History, Columbia University:

Aug. 5—The Problem of the Balkans.

Edward T. Williams, Agassiz Professor of Oriental Languages and Literature;
Technical Member of the American Delegation at the Peace Conference:

July 1—Observations at the Peace Conference.

July 28—Chinese Religions.

ACADEMIC YEAR, 1919-20

AGRICULTURE CLUB LECTURES

3. H. Crocheron, Professor of Agricultural Extension:

Nov. 4—The New Job for Agricultural Graduates.

Thomas Forsyth Hunt, Dean of the College of Agriculture and Professor
of Agriculture.

Dec. 2—Agriculture of the Next Half-Century Compared with that of
the Last Century.

Feb. 5—The Motives for Better Farming.

Feb. 10—The Economics of Better Farming.

I. E. Van Norman, Dean of the University Farm School:

Feb. 3—Laborers Today, Land Owners Tomorrow.

COLLEGE OF COMMERCE LECTURES

Charles H. Victor: "Office Organization and Sales Management."

Oct. 8—Sales Records and Territory Analyses.

Oct. 22—The Advertising Department: Its Relation to the Sales Department.

Oct. 29—Credit Department.

Nov. 5—The Purchasing Department and Stock Records.

Nov. 12—The Shipping and Traffic Department.

Nov. 19—The Order and Filing Department.

DRAWING AND ART DEPARTMENT LECTURES

Kagato Shimoda:

Oct. 30—General History of Japanese Art.

Nov. 6—History of Japanese Color Prints.

Nov. 13—The Secessionists of Japan.

ECONOMICS DEPARTMENT LECTURES

John A. Hobson, of London, England:

Nov. 17—War Lights on Industrial Reconstruction in Britain.

Nov. 20—War Lights on the New State.

Nov. 24—War Lights on Education and Public Opinion.

Nov. 25—War Lights on World Government.

ENGLISH DEPARTMENT LECTURES

Charles Mills Gayley, Professor of the English Language and Literature:

Aug. 29—The Poetry of Kipling.

Sept. 5—Kipling as an Interpreter of British and American Consciousness.

Sept. 12—Kipling, the Awakener of British and American National Consciousness.

Sept. 19—Kipling, the Interpreter of the American Spirit.

Sept. 26—The Covenant of the League of Nations.

Oct. 3—The Facts about the League of Nations.

Oct. 10—The Facts about the League of Nations.

Oct. 17—The Facts about the League of Nations, with special regard to the Shantung and six-to-one provisions.

Oct. 24—Rudyard Kipling.

Nov. 7—Kipling's Poems of Romance.

Nov. 14—The Romance of the Commonplace in Kipling's Works.

Nov. 21—The Romance of Youth in Kipling's Poems.

Dec. 5—Kipling's Poems of Religion.

Jan. 23, 30, Feb. 6, 13, 20—"The Widow in Bye Street," by John Masefield.

Feb. 27, Mar. 5, 12—"The Everlasting Mercy," by John Masefield.

Mar. 26, Apr. 2—"Dauber," by John Masefield.

Apr. 9, 16—"Daffodill Fields," by John Masefield.

A. F. Whyte, of London, England, formerly editor of "The New Europe":

Oct. 31—Anglo-American Relations.

ENGLISH DEPARTMENT READINGS

- Leonard Bacon, Assistant Professor of English:
 Apr. 6—Selected Poems from Swinburne.
- Arthur G. Brodeur, Assistant Professor of English Philology:
 Apr. 12—Bret Harte.
- Harold L. Bruce, Associate Professor of English Composition:
 Mar. 2—Stevenson's "Will o' the Mill" and Kipling's "Tomlinson."
- Charles Mills Gayley, Professor of the English Language and Literature:
 Feb. 24—A Kipling Evening.
- Walter Morris Hart, Professor of English Philology:
 Mar. 9—De Quincey's "The English Mail Coach."
- Thomas F. Sanford, Associate Professor of English Literature:
 Mar. 29—Poets of Japan.

FINE ARTS ASSOCIATION LECTURES

- James Turney Allen, Professor of Greek:
 Oct. 15—The Dramatic Art of Aeschylus.
- Walter Morris Hart, Professor of English Philology:
 Oct. 22—Shakespeare the Dramatist.
- Richard Thayer Holbrook, Professor of French:
 Nov. 5—The French Theatre, Old and Modern.
- Alexander Samuel Kaun, Instructor in Russian:
 Nov. 19—Modern Russian Drama.
 Dec. 3—Russian Drama.
- Sylvanus Griswold Morley, Associate Professor of Spanish:
 Nov. 12—Some Contemporary Spanish Dramatists.
- George Rapall Noyes, Professor of Slavic Languages:
 Oct. 29—Restoration Drama.
- Mrs. Marian L. Stebbins of Mills College,
 Miss Elizabeth Mack, Lecturer in Voice Culture,
 Charles Dore von Neumayer, Associate Professor of Public Speaking:
 Apr. 15—Robert Browning's "In the Balcony."
- Henry Taylor:
 Jan. 20—Type Design in Relation to Printing.
- Mrs. Louise Van Ogle, of the Department of Music, University of Washington:
 Feb. 17—Modern Opera.

FRENCH DEPARTMENT LECTURES

- Albert Feuillerat, of the University of Rennes, France:
 Apr. 27—Les Qualités Intellectuelles des Français.
- Captain Henri Nègre, of the French Army and of the French Commission
 in the United States:
 Dec. 15—La Reconstruction en France depuis l'Armistice.

FRENCH DEPARTMENT READINGS

- Miss Marthe Sturm, Assistant in French:
 Oct. 24—Musset.
 Nov. 7—La Fontaine.
 Nov. 21—Alfred de Vigny.
 Dec. 5—Victor Hugo.

HISTORY OF PHYSICS LECTURES

Florian Cajori, Professor of the History of Mathematics:

Jan. 27—Early Physical Experiments and Inventions.

Mar. 2—Old Physical Experiments and Inventions.

Mar. 16—Electricity and Magnetism during the 18th and beginning of the 19th Centuries.

Apr. 6—The Evolution of Physical and Chemical Laboratories.

HITCHCOCK LECTURES

W. J. V. Osterhout, Professor of Botany in Harvard University:

General subject: "Fundamental Life Processes."

Aug. 20—Origin and Nature of Life, Growth, and Reproduction.

Aug. 21—Motion and Irritability.

Aug. 22—Metabolism.

Aug. 25—Permeability.

Aug. 27—Absorption of Water and of Dissolved Substances.

Aug. 29—Alterations of Permeability. Antagonism.

INAUGURAL CELEBRATION ADDRESSES

David Prescott Barrows, President of the University of California:

Mar. 23—Inaugural Address at Charter Day Exercises.

John C. Merriam, Professor of Palaeontology and Historical Geology and Dean of the Faculties:

Mar. 22—Address of welcome.

INTERNATIONAL RELATIONS LECTURES

David Prescott Barrows, President of the University of California:

Jan. 27—Foreign Mandatories and American Government in the Philippines.

Harvey H. Guy, formerly President of Sei-Gaku-In University, Japan:

Feb. 19—The Relations between Japan and the United States.

Robert Newton Lynch, President of the San Francisco Chamber of Commerce:

Apr. 2—The Problems of the Pacific.

Edward Thomas Williams, Agassiz Professor of Oriental Languages and Literatures:

Feb. 6—American Relations with China.

LEAGUE OF WOMEN VOTERS' CONFERENCE

Mrs. Carrie Chapman Catt, National American Woman Suffrage Association,

Miss Jessie R. Haver, National Consumers' League,

Miss Marjorie Shular, Federal Children's Bureau:

Nov. 25.

MATHEMATICS DEPARTMENT LECTURES

Florian Cajori, Professor of the History of Mathematics:

Nov. 13—Practical Geometry in Olden Times.

Mar. 4—Medieval Methods of Computing on the Exchequer and other Counting Boards.

Mar. 18—The Evolution of the Dollar Mark.

MINING ASSOCIATION LECTURES

- Frank H. Probert, Professor of Mining and Dean of the College of Mining:
Oct. 15—The Crippled Mines of France.
- Alpheus F. Williams, '98, General Manager, De Beers Consolidated Mining Company of Kimberley, South Africa:
Oct. 1—The Diamond Mines of South Africa.

MISCELLANEOUS

- Rev. Eli T. Allen, of Urumia, Persia:
Nov. 10—Persia and the Turkish Horrors.
- Mesrop N. Azgapetian, former Major-General in the Persian Army and Aide-de-camp to the Shah:
Jan. 23—Armenia and the War.
- Jau Don Ball:
Mar. 31, Apr. 2, 7—Modern Psychiatry and its Application in Legal Practice, Civil and Criminal.
- Granville Barker:
Feb. 18—The Artist as a Vital Member of the Community.
- Hugh Henry Bell:
Feb. 27—World Upheavals.
- R. A. Bolt:
Oct. 29—The Educational Value of a Public Health Center.
- Ernest William Brown, Professor of Mathematics in Yale College:
Mar. 25—The Trojan Group of Minor Planets.
Mar. 26—Moon Theory and Tables (under auspices of Astronomical Society of the Pacific).
- Hon. Josephus Daniels, Secretary of the Navy:
Sept. 3—Address on occasion of the Fleet Reception.
- Abbé Ernest Dimnet, Professor in the College Stanislas, Paris, France; author of "France Herself Again":
Jan. 28—Leaders of France during the War and After.
- Charles K. Edmunds, President of Canton Christian College, China:
Mar. 30—Thirty Thousand Miles in China.
- Sydney Gamble, Secretary of the Young Men's Christian Association:
Mar. 29—Present Day Conditions in China.
- Fasuku Harada, President of Doshisha University, Japan:
Mar. 18—The Political and Social Reconstruction of Japan.
- John A. Hobson, of London, England:
Nov. 19—Ethics of International Trade. (Weinstock Lecture.)
- Lynn Harold Hough, President of Northwestern University:
Feb. 20—The English Speaking Peoples and the Future of the World.
- Vicente Blasco Ibañez:
Feb. 9—The Spirit of the Four Horsemen.
- John C. Kennedy:
Oct. 28—Twentieth Century Socialism.
- Gilbert N. Lewis, Professor of Physical Chemistry and Dean of the College of Chemistry:
Mar. 22—Color and Molecular Structure. (Faculty Research Lecture for 1920.)

Vachel Lindsay:

Apr. 15—Orthodox Verse and the Higher Vaudeville.

Maurice Maeterlinck:

Mar. 19—The Unknown Shore.

Regis Michaud, Associate Professor of French Literature:

Oct. 16—French Literature and the Great War.

Hon. William W. Morrow of the United States Circuit Court of Appeals:

Oct. 29—Americanism.

Perham, W. Nahl, Instructor in Freehand Drawing and Art Anatomy:

Oct. 7—The Advertising Value of Posters.

Yone Noguchi, Professor in the University of Kaio, at Tokio, Japan:

Nov. 18—The Spirit of Japanese Poetry.

General John J. Pershing, U. S. Army:

Jan. 25—College Men in the War.

Edward Kennard Rand, Sather Professor of Classical Literature:

Oct. 15—A Defense of Italy's Claims at the Peace Conference.

Paul Samuel Reinsch, former Envoy Extraordinary and Minister Plenipotentiary to the Republic of China:

Mar. 21—Responsibilities of Educational Institutions for Future American Policy in the Pacific.

Chester Harvey Rowell, Regent of the University of California:

May 11—Annual Phi Beta Kappa Address.

W. Van Bemmelen, Director, Royal Observatory, Batavia, Java:

May 20—Java's Volcanoes.

Vito Volterra, Professor of Mathematical Physics, University of Rome:

Oct. 13, 14, 16, 17—Propagation of Electricity in a Magnetic Field.

Oct. 20, 21—Derivate Functional Equations.

PHILOSOPHICAL UNION LECTURES

George Plimpton Adams, Professor of Philosophy:

Sept. 26—An Ethical Analysis of the Present Situation.

William Ray Dennes, Mills Fellow in Philosophy:

April. 30—Social Currents in Recent Pragmatism.

C. I. Lewis, Assistant Professor of Philosophy:

Oct. 31—The Social Reality.

J. Loewenberg, Assistant Professor of Philosophy:

Jan. 30—Metaphysics and Society.

Stephen C. Pepper, Teaching Fellow in Philosophy:

Nov. 21—The Boundaries of Society.

Richard H. Scofield:

Mar. 26—The Scope of Ethics.

Charles H. Toll, of Amherst College:

Feb. 27—The Sciences and the Real.

Edward C. Tolman, Instructor in Psychology:

Dec. 12—Instinct and Purpose.

PHILOSOPHY DEPARTMENT LECTURES

George Boas, Assistant Professor of Forensics:

Apr. 6—The Ethics of Plotinus.

Apr. 13—The Theory of Knowledge of Plotinus.

Apr. 20—The Aesthetics of Plotinus.

PHYSICS DEPARTMENT MEETINGS, LECTURES

- R. B. Abbott, Instructor in Physics:
Jan. 21—Conduction of Electricity in Radio Vacuum Tubes.
- R. T. Birge, Instructor in Physics:
Oct. 8—Recent Theories of Atomic Structure, with special reference to a new theory by Sir J. J. Thomson.
- E. Dershem, Instructor in Physics:
Nov. 12—X-rays and Atomic Structure.
- C. T. Dozier, Instructor in Physics:
Apr. 12—Concerning the Verification of the Einstein Effect by the British Eclipse Expeditions of May, 1919.
- E. E. Hall, Professor of Physics:
Nov. 26—The Conduction of Heat.
- L. T. Jones, Assistant Professor of Physics:
Feb. 4—Atomistic Ether.
- C. H. Kunsman, Whiting Fellow in Physics:
Mar. 17—A Discussion of Experiments on the Electrical Conductivity of Air.
- E. P. Lewis, Professor of Physics:
Sept. 17—Projection and Disintegration of Atoms by Collision with Alpha Particles.
Mar. 3—Low Potential Discharge Band Spectra.
- R. A. Millikan, Professor of Physics in the University of Chicago and the California Institute of Technology:
Mar. 19—Studies on the Artificial Disintegration of Atoms.
- R. S. Minor, Professor of Physics:
Oct. 15—Research in the Extreme Ultra-Violet Region of the Spectrum.
- W. J. Raymond, Associate Professor of Physics:
Feb. 18—New Apparatus and Methods of Measurement.
- Frederick Slate, Professor of Physics, Emeritus:
Oct. 29—A New Reading of Relativity.
- W. H. Williams, Instructor in Physics:
Mar. 31—Some Recent Developments of the Quantum Theory with Special Reference to their Explanation of the Stark Effect.

POLITICAL SCIENCE DEPARTMENT LECTURES

- David Prescott Barrows, President of the University of California:
Sept. 4—Soviet Government in Eastern Europe.
- Edgar Dawson, Professor of American Government:
Feb. 27—What is Education for Democracy?
- James Roy Douglas, Instructor in Political Science:
Oct. 23—The Government and the Railroad Problem.
- Ludwik Ehrlich, Lecturer in Political Science:
Sept. 25—The Peace Conference and its Problems.
- Charles Emanuel Martin, Lecturer in International Law and Political Science:
Oct. 9—Theodore Roosevelt and American Foreign Policy.
- Thomas Harrison Reed, Professor of Municipal Government:
Sept. 11—The League of Nations and the Peace of the World.
Nov. 6—The Politics of the Industrial Crisis.
Feb. 13—The President, the Senate, and the League.

Edward McChesney Sait, Assistant Professor of Politics, Columbia University, Lecturer in Political Science:

Jan. 30—The War and French Political Parties.

Edward T. Williams, Agassiz Professor of Oriental Languages:

Mar. 12—The Rise of Japan.

PUBLIC SPEAKING DEPARTMENT READINGS

Miss Florence Lutz, Lecturer in Voice Culture:

Sept. 10—"Green Stockings," by A. E. W. Mason.

Sept. 17—"The Admirable Crichton," by J. M. Barrie.

Sept. 24—"Washington, the Man Who Made Us," by Percy Mackaye.

Oct. 1—"The Great Adventure," by Arnold Bennett.

Oct. 8—"Romance," by Edward Sheldon.

SATHER LECTURES ON CLASSICAL LITERATURE

Edward Kennard Rand, Professor of Latin in Harvard University and Sather Professor of Classical Literature:

Jan. 29—The Development of Mediaeval Script.

Feb. 5—Libraries in the Middle Ages.

Feb. 12—A French Monastery—St. Martin's of Tours.

Feb. 19—Ancuin and the Script of Tours.

Feb. 26—A German Monastery—St. Gall.

Mar. 25—Sacred Lyric Poetry.

Mar. 30—The Schoolmen and the Classics.

Apr. 1—Mediaeval Humanists.

Apr. 8—Convivial Lyric Poetry.

Apr. 13—The Classical Element in Mediaeval Narrative.

Apr. 15—Mediaeval Ideas about the Drama.

Apr. 20—Dante and Virgil.

Apr. 22—Mediaeval Church Music.

SIGMA XI LECTURES

Joel H. Hildebrand, Professor of Chemistry:

Sept. 27—Research Behind the Battle Line.

John C. Merriam, Professor of Palaeontology and Historical Geology and Dean of the Faculties:

Mar. 23—The Construction of a Geological Scale for the Great Basin of North America.

W. H. Rodebush, Research Associate in Chemistry:

Dec. 10—Low Temperature Research.

G. M. Stratton, Professor of Psychology:

Nov. 20—A Study of Anger and Pugnacity.

TAU PSI EPSILON LECTURES

George Plimpton Adams, Professor of Philosophy:

Mar. 19—Psychology and the Social Sciences.

J. V. Breitwieser, Professor of Education:

Feb. 26—Levels of Behavior.

Warner Brown, Assistant Professor of Psychology:

Apr. 2—Certain Applications of Psychology.

WAR MEMORIAL CERTIFICATES FROM THE REPUBLIC OF FRANCE, PRESENTATION OF

Mar. 7—Wigginton E. Creed, Regent of the University.

Regis Michaud, Professor of French.

DEATHS OF MEMBERS OF THE UNIVERSITY

- Basford, Bruce Cartwright, a graduate student in the School of Jurisprudence, February 24, 1920.
- Coulter, Thomas, Jr., a senior in the College of Agriculture, January 1, 1920.
- Hellman, Isaias Warren, Sr., a former Regent of the University, April 9, 1920.
- Humphrey, Helen Harmon, a student in the Summer Session (Davis), July 29, 1919.
- Jordhay, William Ferdinand, a special student in the College of Mechanics, December 18, 1919.
- Larson, Raymond M., a freshman in the College of Letters and Science, at Nagasaki, Japan, June 16, 1920.
- Lozier, Mervyn Harvey, a junior in the College of Letters and Science, February 22, 1920.
- McGlashan, E. L., Instructor in Orthodontic Technique, December 4, 1919.
- Merrill, George Enoch, Assistant Professor of Agricultural Extension, February 7, 1920.
- Petersen, Peter Theodore, Instructor in Veterinary Science, December 24, 1919.
- Richardson, Rachel, Instructor in Industrial Arts in the Southern Branch, May 23, 1920.
- Scott, Charles, Watchman at the University Farm, Davis, July 29, 1919.
- Takesuye, Albert Eiji, a sophomore in the College of Mechanics, February 1, 1920.

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PUBLISHED WRITINGS OF OFFICERS OF THE UNIVERSITY

July 1, 1919, to June 30, 1920

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ADAMS, R. L., Professor of farm management.

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AITKEN, R. G., Astronomer, Lick observatory.

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ALLEN, J. T., Professor of Greek.

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- ALLEN, L. W., Assistant in military science and tactics.
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- ALLEN, W. E., Biologist and publicity secretary, Scripps institution.
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- BELL, C. H., Instructor in German.
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A soldier at the Sorbonne. North American review, v. 211, p. 36-43, Jan. 1920.
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BRAY, W. C., Professor of Chemistry.

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BREITWIESER, J. V., Associate professor of education.

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BRUCE, H. L., Associate professor of English composition.

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BRYAN, L., Instructor in roentgenology.

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- BURTON, A. M., Instructor in agricultural extension.
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Pruning the peach tree up to bearing age. California peach news, v. 1, no. 1, p. 4, Dec. 1919.
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Shaping deciduous fruit trees. University of California journal of agriculture, v. 6, no. 3, p. 3, 4, Mar. 1920.
So-called "new system of pruning." California state commission of horticulture, Monthly bulletin, v. 8, p. 424-36, July 1919.
- UNDERHILL, L. K., Assistant professor of military science and tactics.
Notes on the military policy of the United States since 1862. University of California, Syllabus series, no. 109, 24 p., Oct. 1919.
- UREN, L. C., Associate professor of mining.
Conventional symbols for mine maps. Mining and science press, v. 119, p. 231-35, Aug. 16, 1919.
An invasion of Hunland with the Army of occupation. University of California, Chronicle, v. 21, no. 3, p. 220-36, July 1919.
- VAILE, R. S., Assistant professor of orchard management, Citrus experiment station, and Graduate school of tropical agriculture.
Breaking a wheat corner in Persia. Pomona college quarterly magazine, v. 8, p. 11-14, Oct. 1919.
Index of citrus prices and wages paid in the citrus industry, compared with Bradstreet's index and union wages. California citrograph, v. 5, p. 250, June 1920.
Trend of development in the citrus industry. California citrus institute, Annual report, p. 105-112, June 1920.
- VAN DYKE, E. C., Assistant professor of entomology.
Description of new species of Cerambycidae (Coleoptera) from the Pacific coast of North America; with notes concerning others. Brooklyn entomological society, Bulletin, v. 15, p. 33-48, June 1920.
- VAN NORMAN, H. E., Professor of dairy management, Vice-director of Agricultural experiment station and Dean of University farm school.
The buckaroo. Agricola, v. 5, no. 13, p. 4, Jan. 23, 1920.
Heads high. Orchard and farm, v. 31, no. 11, p. 4, Nov. 1919.
- VARNY, B. M., Instructor in meteorology.
Edited: Meteorological synopsis of Berkeley, monthly, July 1919-June 1920.

VOORHIES, E. C., Assistant professor of animal husbandry and Assistant to Dean of the college of agriculture.

After graduating—how they succeed. University of California journal of agriculture, v. 6, no. 5, p. 32, May 1920.

Breeds of milk goats. Goat world, v. 4, no. 9, p. 3-6, Oct. 1919.

Cow testing association in California. University of California, Agricultural experiment station, Bulletin 314, 38 p., Oct. 1919.

Feeding milk goats. Goat world, v. 4, no. 11, p. 3-8, Dec. 1919.

Heavy vs. light grain feeding for dairy cows. University of California, Agricultural experiment station, Bulletin 323, 30 p., June 1920.

Management of milk goats. Goat world, v. 4, no. 12, p. 3-6, Jan. 1920.

What constitutes a pure-bred animal. Toggenburg, v. 1, no. 3, 4, p. 11-17, April-June 1920.

WALKER, E. L., Associate professor of tropical medicine.

The chemotherapeutics of the chaulmoogric acid series and other fatty acids in leprosy and tuberculosis. I, Bactericidal action; active principle; specificity (*with* M. A. Sweeney). Journal of infectious diseases, v. 26, p. 238-64, Mar. 1920.

A comparative study of *Leishmania infantum* of infantile kala-azar and *Leptomonas* (*Herpetomonas*) *ctenociphal*i parasitic in the gut of the dog flea (*with* E. E. Tyzzer). Journal of medical research, v. 40, p. 129-76, July 1919.

WALTON, E. L., Assistant in English.

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Indian love songs. Contemporary verse, v. 9, p. 24-25, Feb. 1920.

Navaho songs. Nation, v. 110, p. 517, April 17, 1920.

Old Leonardo: poem. Youth, v. 1, p. 107, Aug. 1919.

Poems. Literary digest, v. 63, p. 33, Oct. 18, 1919.

Poems. University of California, Chronicle, v. 21, p. 207-209, July 1919.

Sipperryana's washday-poem. New republic, v. 20, p. 264, Oct. 1, 1919.

WAY, A. E., Field assistant in viticulture, University farm.

The Greek or Zante currant vine. Sun-maid herald, v. 5, p. 4, 5, 27, Oct. 1919.

WEBBER, H. J., Professor of plant breeding and Director of the Agricultural experiment station.

The necessity of selecting stocks in citrus propagation. California citrograph, v. 5, p. 177, April 1920.

Selection of stocks in citrus propagation. University of California, Agricultural experiment station, Bulletin, 317, p. 267, 302, Jan. 1920.

WEEKS, W. S., Associate professor of mining.

Correcting steel-tape readings for sag and stretch. Engineering news-record, v. 83, p. 404, Aug. 1919.

A drill round model. Mining and scientific press, v. 119, p. 848, Dec. 1919.

Idem. Compressed air magazine, v. 25, p. 957-59, Mar. 1920.

The friction of ventilating currents. Mining and scientific press, v. 120, p. 607, 610, April 1920.

The measurement of ventilating air. *Ibid.*, v. 120, p. 895, 901, June 1920.

Thawing frozen gravel with cold water. *Ibid.*, v. 120, p. 367, 370, Mar. 1920.

The theory of the centrifugal fan. *Ibid.*, v. 120, p. 858, 862, June 1920.

- WHIPPLE, G. H., Professor of research medicine and Director of the Hooper foundation.
 Blood volume studies. I, Experimental control of a dye blood volume method (*with* C. W. Hooper, H. P. Smith, and A. E. Belt); III, Behavior of a large series of dyes introduced into the circulating blood (*with* A. P. Dawson and H. M. Evans). *American journal of physiology*, v. 51, p. 205-220, 232-56, Mar. 1920.
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 Intoxication of intestinal obstruction: toxic proteoses not destroyed in intestinal tract and not formed in colon loops. *In* Osler anniversary volumes, v. 2, p. 1065-73, 1919.
- WHITTEN, J. W., Professor of pomology.
 Frost control and related factors. California state department of agriculture, Monthly bulletin, v. 8, p. 675-78, Nov.-Dec. 1919.
 An investigation in transplanting. Missouri agricultural experiment station, Research bulletin, v. 29, no. 33, 73 p., Jan. 1919.
 Pruning and economy of water. University of California journal of agriculture, v. 6, no. 5, p. 10, 27, May 1920.
 Thinning peaches. Associated grower, v. 1, no. 3, p. 4, May 1920.
 Transplanting deciduous fruit trees. California state department of agriculture, Monthly bulletin, v. 9, p. 675-78, Nov.-Dec. 1919.
- WICKSON, E. J., Professor of horticulture, Emeritus.
 California fruits and how to grow them. Ed. 8, 483 p. San Francisco Pacific rural press, 1919.
- WILKINSON, W. S., Jr., Assistant in agronomy, University farm.
 Cotton plantings in the Sacramento Valley. Agricultural section, Sacramento bee, June 5, 1920.
- WISKOCIL, C. T., Associate professor of civil engineering.
 Pressing out mixing water adds to cement mortar strength. Engineering news-record, v. 83, p. 130-32, July 17, 1919.
- WOODMAN, M. A., Instructor in agriculture, University farm.
 The adornment of home grounds. Berkeley daily gazette, Aug. 19, 1919.
 The California landscape and its development. *Ibid.*, Nov. 7, 8, 1919.
 The city home fruit orchard. *Ibid.*, Jan. 20, 1920.
 The flower garden. *Ibid.*, Oct. 6, 1919.
 Growing vegetables on a small lot. *Ibid.*, May 17, 1920.
- WOODS, B. M., Professor of aerodynamics and University examiner.
 University enrollments. University of California alumni fortnightly, Nov. 15, 1919.
 Review: Manufacturers' aircraft yearbook. Pacific aeronautics, v. 1, no. 6, June 1920.

SUPPLEMENT

Articles omitted from Report of 1918-1919

BOLTON, H. E., Professor of American history and Curator of the Bancroft library.

Cabrillo and Vizcaíno in San Diego Bay. San Diego union, Jan. 1, 1917.

The early explorations of Father Garcés on the Pacific slope. *In his Pacific Ocean in history*, p. 317-30, 1917.

French intrusions into New Mexico. *Ibid.*, p. 389-407, 1917.

The Iturbide revolution in the Californias. *Hispanic American historical review*, v. 2, p. 188-242, May 1919.

The Pacific Ocean in history (*with H. M. Stephens*). 535 p. New York, Macmillan, 1917.

Translated and edited: Father Escobar's relation of the Oñate expedition to California. *Catholic historical review*, v. 5, p. 19-41, April 1919.

CURTIS, H. D., Astronomer, Lick observatory.

Description of 762 nebulae and clusters. Lick observatory, Publications, v. 13, p. 9-43, Mar. 1918.

The planetary nebulae. *Ibid.*, v. 13, p. 57-74, Mar. 1918.

A study of occulting matter in the spiral nebulae. *Ibid.*, v. 13, p. 45-55, Mar. 1918.

FISHER, S. C., Instructor in psychology, Southern branch.

An analysis of a phase of the process of classifying. *American journal of psychology*, v. 28, p. 57-116, Jan. 1917.

HERMS, W. B., Associate professor of parasitology.

Contribution to the life history and habits of the spinose ear tick, *Ornithodorus megnini*. *Journal of economic entomology*, v. 10, p. 407-411, Aug. 1917.

The Indian meal moth (*Plodia interpunctella* Hubn.) in candy, and notes on its life history. *Ibid.*, v. 10, p. 563, Dec. 1917.

The mosquito survey of California; an account of the second season's work. California state board of health, *Monthly bulletin*, v. 13, p. 267-71, Dec. 1917.

Parasitology in the service of preventive medicine. *Berkeley daily gazette*, p. 7, Feb. 15, 1918.

MARSHALL, J. A., Assistant professor of biochemistry and pathology.

Inspector's manual. U. S. Ordnance office, Publication no. 1792, 84 p., Jan. 1918.

Specifications and testing cartridge cloth. *Ibid.*, Publication no. 3274, 1918.

MOORE, L. M., Instructor in physiology.

Experimental studies on the regulation of body temperature. I, Normal temperature variations and the temperature effects of operative procedures; II, Relation of the corpus striatum to the regulation of body temperature. *American journal physiology*, v. 46, p. 244-52, 253-74, June 1918.

POPPER, W., Associate professor of Semitic languages.

Abû 'l-Maḥâsin ibn Taghrî Birdî's annals. University of California, Publications in Semitic philology, v. 6, p. 322-476, Dec. 1918.

Parallelism in Isaiah I-X. *Ibid.*, v. 1, p. 267-444, Aug. 1918.

Pilgrimage (Hebrew and Jewish). Encyclopaedia of religion and ethics, v. 10, p. 23-24, 1919.

Purification (Muslim). *Ibid.*, v. 10, p. 496-500, 1919.

QUAYLE, H. J., Professor of entomology in Citrus experiment station and Graduate school of tropical agriculture.

Fumigation with liquid hydrocyanic acid. University of California, Agricultural experiment station, Bulletin 308, p. 392-428, June 1919.

SUNDAY HALF-HOURS OF MUSIC IN THE GREEK THEATRE

BETWEEN JULY 1, 1919, AND JUNE 30, 1920

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- July 6—The Riccally String Quartette: Warner Callies, 1st violin; Siegfried Callies, 2nd violin; Mrs. I. Callies, viola; Mr. R. Callies, 'cello.
- July 13—Lincoln S. Batchelder, pianist; E. Harold Dana, baritone.
- July 20—Department of Music of the Summer Session, under the direction of Mr. Frederick Alexander: Summer Session Chorus, Summer Session Orchestra, Miss Madge Quigley, pianist, Mr. Sascha Jacobinoff, violinist.
- July 27—Lida Carnahan, dramatic soprano; Frederick Maurer, Jr., pianist.
- Aug. 17—Anna G. Mautz, contralto.
- Aug. 24—Catherine Urner, winner of the Ladd Prix de Paris, in a programme of her own compositions; assisted by Leno Frazee, contralto, Arthur Conradi, violinist, George Edwards, pianist, and Beatrice Clifford, accompanist.
- Aug. 31—Rosalie Housman, in a programme of her own composition, assisted by George Edwards, pianist.
- Sept. 7—Henrik Gjerdrum, pianist; assisted by Blanche Hamilton Fox, mezzo soprano, and August Johnson, baritone.
- Sept. 14—Shrine Band of San Francisco; Theodore Walters, manager, G. W. Bennett, conductor.
- Sept. 21—Harriet Pasmore, contralto; Mrs. Suzanne Pasmore-Brooks, accompanist.
- Sept. 28—Hattibelle Root, soprano; Mr. Rex N. Hamlin, flutist; Miss Mary Lichthart, accompanist.
- Oct. 5—Ethel Johnson, soprano; Albert E. Rosenthal, 'cellist; Violet Oatman and Suzanne Pasmore-Brooks, accompanists.
- Oct. 12—Marian Patricia Cavanaugh, pianist.
- Oct. 19—Lenore Cohrone Hart, soprano; Edna Horan, violinist; Elsie Young, pianist.
- Oct. 26—Miss Carmel Mitchell, mezzo-soprano; Mrs. Hope Houghton Suriford, pianist.
- Nov. 2—Hattibelle Root, soprano; Rex N. Hamlin, flutist; Mary Lichthardt, accompanist.
- Nov. 16—Miss Idelle Rutteneutter, pianist; Miss Henriette Roumiguere, pianist.
- Nov. 23—Mavis S. Scott, contralto; Constance Merring, accompanist.
- Nov. 30—Mme. LeBarraque, soprano; Georgie Zeh, contralto; May Scott, accompanist.
- Mar. 14—E. Gordon Erickson, soloist.
- Mar. 21—Kajetan Attl, soloist.
- Mar. 28—Henrik Gjerdrum, pianist; assisted by Ellen Page Pressley, lyric soprano; Len Barnes, baritone.
- Apr. 4—University Band.
- Apr. 18—Mme. Christine LaBarraque, soprano; Georgie Zeh, contralto; May Scott, pianist.

UNIVERSITY MEETINGS

- Aug. 18—George Cunningham Edwards, Professor of Mathematics, Emeritus.
Benjamin Ide Wheeler, President Emeritus and Professor of Comparative Philology.
- Aug. 25—Special Meeting:
John Kendrick Bangs, Author, Lecturer, and Humorist.
- Aug. 29—W. J. V. Osterhout, Professor of Botany in Harvard University,
Lecturer on the Hitchcock Foundation.
Edward Kennard Rand, Professor of Latin in Harvard University,
Sather Professor of Classical Literature.
- Sept. 12—Burgess Johnson, Associate Professor of English and Director of
the Bureau of Publications in Vassar, formerly Editor-in-Chief of *Judge*.
Edward Thomas Williams, Agassiz Professor of Oriental Languages and Literature;
Technical Adviser to the American Commission to Negotiate Peace.
- Sept. 26—William Palmer Lucas, Professor of Pediatrics, Director of the
Children's Bureau of the American Red Cross in France.
William Wallace Campbell, Director of the Lick Observatory,
Chairman of the American Delegation to the meeting of the
International Research Council at Brussels.
- Oct. 10—Clare Morse Torrey, '13, Member of the Commission for Relief
in Belgium and American Relief Administration.
Dr. Paul S. Reinsch, Envoy Extraordinary and Minister Plenipotentiary.
Music: Miss Gertrude Francis Harrington, '22, violinist.
- Oct. 27—Memorial to the late President Theodore Roosevelt:
Speaker: Benjamin Ide Wheeler, President Emeritus of the
University and Professor of Comparative Philology.
- Nov. 7—Our Allies as seen by the First California Unit Overseas:
Paul Cadman, '15.
John Boardman Whitton, '16.
Whitney Braymer Wright, '17.
- Nov. 21—Walter Kemple Tuller, '08.
Andrew I. Smith, Coach, Varsity Football Team.
John Allen Stroud, '13, Assistant Coach, Varsity Football Team.
Fred Brooks, '20, Captain, Varsity Football Team.
- Jan. 16—President David Prescott Barrows.
- Jan. 30—Edwin R. A. Seligman, McKim Professor of Finance in Columbia University,
Exchange Professor in the University.
Edward McChesney Sait, Assistant Professor of Politics in Columbia University,
Lecturer in Political Science in the University.

Feb. 27—Silas Evans, President of Occidental College.

John Campbell Merriam, Professor of Palaeontology and Historical Geology, Dean of the Faculties.

Mar. 12—Student Self-Government and the Honor Spirit.

Leslie William Irving, '20.

Miss Doris Peoples, '20.

Ray Vandervoort, '18.

William Joseph Hayes, '09.

Professor Clarence L. Cory.

President David Prescott Barrows.

Apr. 9—Ephraim Douglas Adams, Professor of History in Stanford University.

Robert Newton Lynch, former President of the San Francisco Chamber of Commerce.

Music: Treble Clef Society.

Apr. 23—Eleanor Barnard, '20, John Wesley Cline, Jr., '21, Robert Emmet Connolly, '20, Harold Dexter, '20, Norman Sterne Gallison, '20, Leroy M. Gimbal, '20, Donald Munson Gregory, '20, Charles Francis Honeywell, '20, Leslie William Irving, '20, Ruth LeHane, '20, Sumner N. Mering, '20, Katherine Schwaner, '20, Katherine Amelia Towle, '20, E. Irving White, '20.

SECRETARY OF THE REGENTS AND COMPTROLLER

UNIVERSITY OF CALIFORNIA,
BERKELEY, July 1, 1920.

*To the Honorable Board of Regents
of the University of California.*

GENTLEMEN: I have the honor of presenting the following report of the Secretary and Comptroller for the year ending June 30, 1920, consisting of a roster of the Board and its committees, such items selected from the minutes of the Board as are considered to be of general interest, with the exception of gifts, which are listed in the report of the President of the University, and the financial statement of the University as approved by the auditors.

Respectfully submitted,

ROBERT G. SPROUL,
Assistant Secretary of the Regents,
Assistant Comptroller.

REGENTS OF THE UNIVERSITY, 1919-20

REGENTS EX OFFICIO

HIS EXCELLENCY WILLIAM DENNISON STEPHENS.....	Sacramento
<i>Governor and ex officio President of the Regents</i>	
CLEMENT CALHOUN YOUNG, B.L.....	276 Post Street, San Francisco
<i>Lieutenant Governor</i>	
HENRY W. WRIGHT.....	1009 Fair Oaks, South Pasadena
<i>Speaker of the Assembly</i>	
WILL C. WOOD.....	Sacramento
<i>State Superintendent of Public Instruction</i>	
GEORGE C. ROEDING.....	Holland Building, Fresno
<i>President of the State Agricultural Society</i>	
BYRON MAUZY.....	250 Stockton Street, San Francisco
<i>President of Mechanics' Institute</i>	
DAVID PRESCOTT BARROWS, Ph.D., LL.D.....	California Hall, Berkeley
<i>President of the University</i>	
WIGGINTON ELLIS CREED, A.B.....	593 Market Street, San Francisco
<i>President of the Alumni Association (Term ending June 13, 1920)</i>	
WARREN GREGORY, A.B., LL.B.....	Merchants Exchange Bldg., San Francisco
<i>President of the Alumni Association (Term beginning June 13, 1920)</i>	

APPOINTED REGENTS

The term of the appointed Regents is sixteen years, and terms expire March 1 of the year indicated. The names are arranged in the order of original accession to the Board.

ARTHUR WILLIAM FOSTER, Esq.....	1938
226 Southern Pacific Building, San Francisco	
GARRETT WILLIAM MCENERNEY, Esq.....	1930
2002 Hobart Building, San Francisco	
GUY CHAFFEE EARL, A.B.....	1934
14 Sansome Street, San Francisco	
CHARLES STETSON WHEELER, B.L.....	1928
Nevada Bank Building, San Francisco	
JOHN ALEXANDER BRITTON, Esq.....	1930
445 Sutter Street, San Francisco	
RUDOLPH JULIUS TAUSSIG, Esq.....	1932
1521 Van Ness Avenue, San Francisco	
WILLIAM HENRY CROCKER, Ph.B.....	1924
Crocker National Bank, San Francisco	
PHILIP ERNEST BOWLES, Ph.B.....	1922
American National Bank, San Francisco	
JAMES KENNEDY MOFFITT, B.S.....	1924
First National Bank, San Francisco	
REV. CHARLES ADOLPH RAMM, B.S., M.A., S.R.B.....	1928
1100 Franklin Street, San Francisco	

EDWARD AUGUSTUS DICKSON, B.L.....	1926
510 Lucerne Blvd., Los Angeles	
JAMES MILLS, Esq.....	1926
Hamilton City, California	
CHESTER HARVEY ROWELL, Ph.B.....	1936
Fresno, California	
MORTIMER FLEISHHACKER, Esq.....	1934
Anglo-California Trust Company, San Francisco	
GEORGE I. COCHRAN, LL.D. (vice Mrs. Phoebe A. Hearst).....	1930
501 West Sixth Street, Los Angeles	
MRS. MARGARET SARTORI (vice J. W. McKinley).....	1922
725 West Twenty-eighth Street, Los Angeles	

OFFICERS OF THE REGENTS

HIS EXCELLENCY WILLIAM DENNISON STEPHENS.....	Sacramento
<i>President</i>	
RALPH PALMER MERRITT, LL.D.....	220 California Hall, Berkeley
<i>Comptroller and Secretary (Resigned March 16, 1920)</i>	
ROBERT G. SPROUL, B.S.....	220 California Hall, Berkeley
<i>Assistant Comptroller and Assistant Secretary</i>	
MORTIMER FLEISHHACKER....	Anglo-California Trust Company, San Francisco
<i>Treasurer</i>	
F. M. MANNON, JR., LL.B.....	Merchants Exchange Building, San Francisco
<i>Counsel</i>	

STANDING COMMITTEES OF THE REGENTS FOR 1919-20*

<i>Agriculture</i> : Regents Foster, Roeding, Bowles, Mills, and Cochran.
<i>Curriculum and Degrees</i> : Regents Rowell, Moffitt, Ramm, Wood, and Creed.
<i>Endowments</i> : Regents Crocker, Britton, Mrs. Sartori, Bowles, Cochran, McEnerney, and Fleishhacker.
<i>Executive</i> : This committee consists of the chairmen of all the other committees, and the President of the Alumni Association.
<i>Finance</i> : Regents Earl, Foster, Britton, Moffitt, and Taussig.
<i>Grounds and Buildings</i> : Regents Britton, Wheeler, Bowles, Dickson, and Fleishhacker.
<i>Lick Observatory</i> : Regents Ramm, McEnerney, Young, Crocker, and Wright.
<i>Library</i> : Regents Moffitt, Mauzy, Bowles, Wheeler, and Mills.
<i>Medical Instruction and University Hospital</i> : Regents Crocker, Taussig, Britton, Earl, Moffitt, Ramm, and Mrs. Sartori.
<i>Southern Branch of the University of California and Scripps Institution for Biological Research</i> : Regents Dickson, Cochran, Creed, Mrs. Sartori, Wood, Rowell, and Taussig.
<i>Vilmerding School</i> : Regents Taussig, Earl, and Moffitt.

*The President of the Board of Regents and the President of the University are ex-officio members of all committees of the Board. In each committee the name of the chairman appears first and the name of the vice-chairman second.

SPECIAL COMMITTEE OF THE REGENTS DURING 1919-20*

Committee on Committees for 1920-21: Regents Earl, Britton, Dickson, Moffitt, and Taussig.

STANDING COMMITTEES OF THE REGENTS FOR 1920-21*

Agriculture: Regents Foster, Roeding, Dickson, Mills, Cochran, and Taussig.
Committee on Conference with Faculty: Regents Moffitt, Gregory, Taussig, Rowell, and Ramm.

Endowments: Regents Crocker, Britton, Mrs. Sartori, Bowles, Cochran, McEnerney, and Fleishhacker.

Engineering: Regents Ramm, Fleishhacker, Britton, Roeding, and Bowles.

Executive: This committee consists of the chairmen of all the other committees, and the President of the Alumni Association.

Finance: Regents Earl, Foster, Britton, Moffitt, and Taussig.

Grounds and Buildings: Regents Britton, Wheeler, Bowles, Dickson, and Fleishhacker.

Jurisprudence: Regents McEnerney, Cochran, Wheeler, Gregory, and Young.

Letters and Science: Regents Rowell, Wheeler, Ramm, Wood, Gregory, and Mills.

Library, Research, and Publications: Regents Bowles, Moffitt, Gregory, Wood, Earl, Mauzy, and Rowell.

Lick Observatory: Regents Fleishhacker, McEnerney, Crocker, Mauzy, and Wright.

Medical Instruction and University Hospitals: Regents Crocker, Taussig, Britton, Earl, Moffitt, Ramm, Mrs. Sartori, and Bowles.

Southern Branch of the University of California and Scripps Institution for Biological Research: Regents Dickson, Cochran, Gregory, Mrs. Sartori, Wood, Rowell, and Taussig.

Wilmerding School: Regents Taussig, Earl, Moffitt, and Mauzy.

 JULY, 1919
University of California Designated as Honor School:

President Wheeler reported that General Peyton C. March, Chief of Staff, in a Bulletin of the War Department, had informed him that the University of California had been designated as a "Distinguished College and Honor School for the year 1919." This is the fifth consecutive year that the University has received such distinction.

Agricultural Appropriation Bill:

President Wheeler reported that under the Agricultural appropriation bill, which was passed by Congress on June 30, the Department of Agriculture receives \$20,400 toward the salaries of men in the Agricultural Extension Division.

*The President of the Board of Regents and the President of the University are ex-officio members of all committees of the Board. In each committee the name of the chairman appears first and the name of the vice-chairman second.

Collection of Music for Chimes:

In order that an appropriate collection of music for use on the chimes in the Sather Tower might be gathered together, the Regents authorized the expenditure of \$300 during the period from July 10 to December 31, 1919.

Lease, Frank Carson:

On recommendation of the Finance Committee a lease on 280 acres of land in Kern County to Frank Carson was authorized for one year, beginning November 1, 1918, at the rate of \$140 per year.

Membership in American University Union in Europe:

To continue the membership of the University of California in the American University Union in Europe for the fiscal year 1919-20, \$500 was appropriated. This contribution was made in view of the fact that there are still many Californians in Europe to whom the Union may be useful.

Carpentier Bequest:

It was voted that the income of the Carpentier bequest of \$6094.83, received in July, be used, by preference, for the purchasing of books and other materials of instruction and research relating to the five great areas of Asiatic civilization, particularly China, Japan, India, Arabia, and Babylonia, in accordance with General Carpentier's thought and desire.

AUGUST, 1919

Contract for Street Work:

A contract for street work on Allston way between Dana and Oxford streets, Berkeley, was approved, and the President and Secretary of the Board were authorized and directed to execute a contract with Bernard Ransome.

S. A. T. C. Claim:

The action of the Assistant Comptroller was approved and confirmed in having signed a contract with the Navy Department embodying a claim of \$1183.01, being the amount due the University for expenditures on behalf of the Naval Unit of the Students' Army Training Corps.

Transfer of Los Angeles Normal School to Regents:

The transfer of the Los Angeles State Normal School to the Regents of the University of California was approved, in accordance with an act of the Legislature "providing for the establishment of a branch of the University of California at Los Angeles, continuing regular normal school training courses and providing an appropriation for the support and maintenance thereof," approved May 24, 1919. It was voted at the July meeting of the Board that this institution be known as "The Southern Branch of the University of California."

Contract for Greek Theatre Performances:

A standard form of contract for performances in the Greek Theatre was approved, and the Comptroller was authorized to sign the same in behalf of the Regents.

SEPTEMBER, 1919

Conference with State Board of Control Account of Increased Registration:

The Finance Committee reported a visit of a special committee of the Regents to Sacramento to confer with the State Board of Control with regard to the financial emergency arising from the unusual registration at the University this year. The case was placed before the Board, which agreed with the Regents that all students should be taken care of, and a deficit estimated at \$70,000 incurred for the year.

Contract with Federal Board for Vocational Education:

The Secretary was authorized to enter into a contract covering the instruction of students sent to the University by the Federal Board for Vocational Education, such students to be received on the same financial basis as regular students of the University.

Admission Requirements to Southern Branch:

It was voted that the rule at Berkeley making vaccination a prerequisite to admission should also be applied to all entrants, both to the junior college and to the normal school, in the Southern Branch of the University.

OCTOBER, 1919

Mine Rescue Station:

The United States Bureau of Mines indicated a desire to locate at Berkeley a mine rescue station for which an appropriation of Congress provided the sum of \$25,000 and the Regents extended the Bureau an invitation to house the equipment of the mine rescue station in the Hearst Memorial Mining Building and to occupy such office space in that building as might be necessary.

Deed, John H. Busick:

The President and Secretary of the Board were authorized to execute a deed to John H. Busick of lots Nos. 3 and 4 of Section 12, Township 14, South, Range 19 East, M. D. B. & M., of the Fruitvale Estate in the County of Fresno.

Trusteeship of Fund Left to Professor Schevill:

The Regents assumed the trusteeship of a fund of \$6000 left to Professor R. Schevill, of the Department of Romanic Languages, under the will of Mrs. Phoebe A. Hearst, for the completion of a work on Cervantes, on which he and Professor Bonilla of Madrid have been working.

Appointment of Curator:

The Comptroller was made Curator of the University of California for the purpose of withdrawal of alcohol for the University for scientific uses, in accordance with the United States revenue laws.

Contract with Federal Board for Vocational Education, Southern Branch:

The Secretary was authorized to enter into a contract covering the instruction of students sent to the Southern Branch of the University of California by the Federal Board of Vocational Education.

Intersession Term:

It was voted that for the year 1920 only, a term of six weeks be added to the Summer Session, beginning Monday, May 10, 1920, and extending to Saturday, June 19, 1920, to be known as an Intersession and to be given under the direction of Dr. W. M. Hart, Dean of the Summer Sessions.

Commissions of Regents:

The following Regents presented their commissions: Mrs. Margaret Sartori of Los Angeles, vice J. W. McKinley, deceased, for the term expiring in 1923; and Mr. George I. Cochran of Los Angeles, vice Mrs. Phoebe A. Hearst, deceased, for the term expiring in 1930.

NOVEMBER, 1919**Offices for University Extension Division, Los Angeles:**

On the recommendation of the Finance Committee, a lease was authorized for the period of two years for offices of the University Extension Division on the fourth floor of the Metropolitan Building in Los Angeles, at a rental of \$259.27 per month.

Director's Fees, Pacific Improvement Company:

It was voted that the directors' fees paid to those Regents who serve as directors of the Pacific Improvement Company, representing thereon the Board of Regents, should be paid into the treasury of the University of California as additions to the principal of the Searles Fund.

Program Outlined by Secretary of Regents:

The following program, presented by the Secretary of the Board, Mr. Ralph P. Merritt, was accepted:

In order that the University of California may properly and adequately fulfill the responsibilities laid upon it by the present world crisis, it is of special importance that the following policies be adopted by the Regents and carried forward by them:

(1) That through the public service efforts of the University of California, the University should exert powerful leadership in the crystallization of public thought in defense of American institutions and American ideals, and this work should especially be recommended to the attention of the Department of Agriculture and University Extension Division.

(2) That in all teaching branches of the University, especial and forceful stress be made upon the necessity for clear and sound thinking with reference to the maintenance of American ideals and American institutions of government. For this purpose, there should be created a special committee of the faculty by the Administrative Board to bring this matter to the attention of all departments and particularly those departments which can be of greater service, namely, the departments of History, Economics, Political Science, Education, Agriculture, Jurisprudence, and Philosophy.

(3) That especially the departments of Economics and Political Science should be strengthened by the addition of such men as may be particularly fitted to make effective the University's obligation to the state in the present industrial and economic crises. For the spring and fall of 1920, Professor Dawson has been called to the Department of Political Science

for the primary purpose of revitalizing the teaching of government, civics, and political science in the elementary high schools and normal schools of the state, in addition to University duties. That there be immediately created in the Department of Economics, commencing January 1, 1920, a position paying not less than \$2400 to which shall be called an expert in the field of labor; and that \$500 in addition to the \$3000 now available in that department should be made available commencing January 1, 1920, for a position to be filled by an expert in the field of industry and employment.

(4) That plans be immediately made for the establishment not later than August 1, 1920, at the University of California, of a School of Education which at that time or as soon as possible thereafter shall be adequately financed and equipped to train men and women for the teaching profession on lines comparable to opportunities offered in the Teachers College of Columbia and University of Chicago. That under such School of Education there be drawn together all those efforts now being made by the University of California in the training of teachers, and in addition there shall be created such further functions as shall be necessary to give new light and opportunity for the perfection of teaching.

(5) That commencing July 1, 1920, there shall be a general increase in the salary levels paid to the faculty of the University of California so as to provide salaries upon an equal basis with those paid or proposed to be paid, in other institutions of equal grade, and to provide incomes to faculty members sufficient at least to meet the increased cost of living.

Drill Field and Playground:

It was voted that the northwest corner of the campus, which has been used for certain experimental work in agriculture, be graded and prepared for use as a drill field and playground. This action was taken in view of the fact that the facilities of the University for drill and physical education during the past few years have become entirely inadequate and must be immediately supplemented.

DECEMBER, 1919

Presidency of University of California:

On the recommendation of the Executive Committee, David Prescott Barrows was unanimously elected President of the University of California.

Acceptance of Presidency:

The Secretary presented the following letter confirming Professor David P. Barrows' verbal acceptance of the Presidency:

"The Board of Regents of the

"University of California.

"I have the honor to confirm my verbal acceptance of the appointment by the Board of Regents to the position of President of the University of California, made vacant by the resignation of President Benjamin Ide Wheeler, effective December 1, 1919.

"I desire to express anew my sense of the great distinction conferred upon me, and of my gratitude to the Board of Regents for this expression of confidence and regard.

"(Signed) DAVID P. BARROWS.

"Berkeley, California, December 4, 1919."

Meeting of Regents in Los Angeles:

In view of the large interests of the University in Southern California, and the importance to the University of its clients in that part of the State, it was voted to hold the February meeting of the Regents in Los Angeles.

Radium Supply at University Hospital:

It was voted to advance the sum of \$35,000 for the purchase of radium for the University Hospital, to be repaid from the earnings in connection with its use. This sum, together with \$16,000 contributed through private generosity, makes possible the purchase of 400 grams of radium in solution and the conversion of 200 grams now in crystalline form at the Hospital, thus making a total supply of 600 grams of radium in solution, in which form it has been discovered to be most effective.

Deed, Lester H. Eastin:

The President and Secretary were authorized to execute a deed to Lester H. Eastin for lots 51, 52, 53, 54, 55, and 56 of the Kearney Vineyard property.

Contract, California Associated Raisin Company:

A contract with the California Associated Raisin Company was approved for the crops of Kearney Vineyard for the years 1918, 1919, and 1920.

Appropriation, American Council on Education:

The sum of \$500 was appropriated as the contribution of the University of California to the American Council on Education, to be used in conjunction with funds from other educational institutions of the country for the support of the work of the Council for the current year.

JANUARY, 1920**Deaths:**

The President reported with regret the deaths of Dr. Jesse F. Millsbaugh, Dean of the Southern Branch of the University, and Dr. P. T. Petersen, Instructor in Veterinary Science, on December 12, 1919, and December 24, 1919, respectively.

Kearney Vineyard Deeds:

Approval was given the action of the President and Assistant Secretary in having signed a deed in favor of John Garbedian for lots 49 and 50 in Section 11, Township 14 South, Range 19 East, M. D. B. & M., and a deed in favor of Gooltana Krikorian and H. Magarian for lot 30, in Section 12, Township 14 South, Range 19 East, M. D. B. & M., all of the Kearney Vineyard property.

Contract with Federal Board for Vocational Education:

Approval was given the action of the Assistant Comptroller in having executed a contract with the Federal Board for Vocational Education covering students at the University Farm, Davis.

Funds from National Canners' Association:

It was voted to accept from the National Canners' Association the sum of \$24,000 a year for two years to support an investigation which is to be conducted jointly by the Medical School of Stanford University and the Hooper Foundation in connection with poisoning from canned goods due to *bacillus botulinus*.

Contracts, Citrus Groves:

The action of the Secretary was approved and confirmed in having signed a contract with certain organizations representing growers and shippers of citrus fruit in Tulare County, California, for the purpose of carrying on during a period of five years, scientific field trials of cultural methods and fertilization of citrus groves, with special reference to their influence upon production of citrus fruits, there being no financial liability of the Regents under the contract.

Contract with Mrs. Annie M. Steinburg:

A contract with Mrs. Annie M. Steinburg was authorized for the purpose of conducting, during a period of five or more years, a scientific field trial of methods of irrigating bearing walnut trees, with special reference to the effect of irrigation in its relation to winter injury of walnut trees.

University Farm at Riverside:

In accordance with instructions contained in Assembly Bill Number 38 passed by the State Legislature in 1919, entitled "An act to establish a University Farm in Riverside County and making an appropriation to carry out the purposes hereof," the Regents entered into a contract to purchase the following land and water rights in the County of Riverside making an initial payment of \$23,000, being the amount appropriated in the act referred to above, the balance to be paid if, as, and when the Legislature appropriates the necessary money:

300 acres of the Gage Tract, at \$300 per acre.....	\$90,000.00
90 inches of water from the Hunt wells	42,500.00
Carrying capacity for 90 inches of water in the Gage Canal, at \$100 per inch	9,000.00
	<hr/>
	\$141,500.00

FEBRUARY, 1920

Adoption of Semester System at Southern Branch:

The semester system was instituted at the Southern Branch of the University for the academic year 1920-21.

Sale of Herzstein Property:

The action of the President and Assistant Secretary was approved and confirmed in having executed a deed to K. Hovden Company for the Herzstein property in New Monterey.

Lease with Elizabeth R. Whittleton:

A lease with Mrs. Elizabeth R. Whittleton was authorized for 2.42 acres near Mountain View, Santa Clara County, for the term of five years, at the annual rental of \$600. This property consists of a fruit ranch which is used as headquarters for certain projects to be investigated under the state appropriation for deciduous fruits.

Projects for Students' Labor Day:

The following projects were approved for the Students' Labor Day on March 1, 1920:

(1) The construction of a road from the Chemistry Laboratory to Hearst avenue at Charter Rock (La Loma street), with a possible branch to Highland avenue.

(2) The construction of a natural amphitheatre in the gulch north of the Greek Theatre to be used for such productions as the Parthenia.

(3) The construction of a new path of gradual incline to the south entrance of the Greek Theatre.

The second item covers work which will be the beginning of a proposed glade theatre, the general plan of which is approved by the Grounds and Buildings Committee.

MARCH, 1920**Deaths:**

The President reported with regret the following deaths:

E. L. McGlashan, Instructor in Orthodontic Technique, on December 4, 1919.

George Enoch Merrill, Assistant Professor of Agricultural Extension, in Santa Rosa on February 7, 1920.

Investment of Stephens Memorial Fund:

The Comptroller was authorized to invest approximately \$100,000, collected on subscriptions to the Henry Morse Stephens Memorial Fund, in United States Treasury certificates. This action was taken in order that the funds might be earning interest during the period which must elapse before construction could commence.

Professorial Salary Scale:

On the recommendation of the President, the following salary scale was adopted:

Professors, \$4000 to \$8000; associate professors, \$3000 to \$4000; assistant professors, \$2700 to \$3000; instructors, \$1800 first year, \$2000 second year, \$2200 third year, \$2400 fourth year; that the title of instructor be given to those teachers possessing promise of qualifying for professorial rank; that appointments as instructor be for one year only and that the entire period of service be regarded as probationary; that the appointment as assistant professor be for a period of three years, with a recognized right on the part of the University to terminate the appointment at the end of this period; that appointment as associate professor or full professor carries with it security of tenure in the full academic sense; that salaries or honoraria paid to deans, directors, and other administrative officers within the faculties be additional to the above salaries received as professors or instructors, and that the tenure of all such academic administrative officers be at the pleasure of the Board of Regents.

Offices in Los Angeles:

Office space for the Regents, the University Extension Division, and the President was arranged for in a new building being erected at Sixth and Olive streets, Los Angeles.

Commission, Regent McEnerney:

Regent McEnerney presented his commission, dated March 1, 1920, whereby the Governor appointed him a member of the Board of Regents for a new term commencing on the date of the issuance of the commission.

APRIL, 1920

Nomination, Professor Herbert E. Bolton:

Professor Herbert E. Bolton was nominated to the Governor of California, for his approval, as a member of the California Historical Survey Commission for a term of two years ending June 30, 1922, in accordance with an Act approved by the Governor of California on June 12, 1915. This is a reappointment.

Death:

The President reported with regret the death of Dr. Henry Horn, Assistant in Otology, Rhinology, and Laryngology in the Medical School, in San Francisco on March 5, 1920.

Lease of Quarters for Nurses' Homes:

The President and Secretary of the Board of Regents were authorized to execute a lease of quarters for the nurses at the Hahnemann Hospital for the period of two years from the first day of April, 1920, at the total rent of \$5400.

Letter of Resignation from Comptroller:

The following letter of resignation from Mr. Ralph P. Merritt was presented:

“Berkeley, March 16, 1920.

“To the Regents of the

“University of California:

“I hereby resign as Secretary and Comptroller of the University of California to take effect immediately.

“It is with greatest regret that I sever my official connections with your Board and with the President, faculty and students of the University.

“On October 7, 1919, I addressed a letter to your Board, which was afterward made public by you, in which I declined to be a candidate for the Presidency of the University of California, and in which I also stated that my further service to the University would be completed as soon as a new President was elected and installed in office. Doctor David P. Barrows, who was happily chosen President of the University, is about to be inaugurated and I have rendered to him all of the assistance possible in the initiation of his office.

“Therefore, with due regard to my deep obligations to the University of California, I believe that this phase of my public service may be properly ended and that I may be allowed to enter other fields of activity without embarrassment to the University or loss to its interests.

“Speaking with utmost frankness, I am offering my resignation two months earlier than I had anticipated in order that at this time I may be free to participate in the Republican campaign to nominate Herbert Hoover as President of the United States. Believing in the national

programme and the sound Americanism for which Mr. Hoover stands today before the country, this is clearly my public duty at the present moment.

"My decision in this matter is confirmed because I served during the war as an appointee of the President under Mr. Hoover. There is no foundation for the superficial arguments of entrenched political leaders that those who believe most strongly in Herbert Hoover have no right to express their convictions and citizenship through public effort.

"Therefore, as a Republican, believing in the League of Nations, in the constructive industrial and humanitarian national programme of Mr. Hoover, and in the necessity of a courageous business administration, such as he is preëminently qualified to give, I desire to advise you of the purposes which I have in mind for the next few months before again entering the field of private business enterprise.

"Very respectfully,

"RALPH P. MERRITT."

Regent Wheeler voiced the regret of the Board at the resignation of the comptroller, and the following resolution was adopted:

"Ralph Palmer Merritt, LL.D., Comptroller of the University, since January 1, 1912, resigned his post on March 17, 1920. These eight years of devoted service have been fraught with such abundance of gain and advantage for the University, that the Regents desire to place upon their minutes this special note of appreciation and thanks.

"Mr. Merritt is a Californian, born at Rio Vista, February 26, 1883. His parents were of old New England stock. He graduated from the University of California in 1907. From 1908-10 as Secretary to the President he laid an ample basis for the Comptrollership that was to follow, and the two tenures now combine to make in reality ten full years of university service. For the last year of his baccalaureate course he was President of the Associated Students, and from 1908 to 1910 as Graduate Manager he was coming into closest relationship with student ways and desires. From 1910 to 1912 he was General Manager of Miller & Lux, Inc., and in this capacity had opportunity to test the methods and standards of business life, and at the same time to measure his own ability in these fields. Early in 1917 Mr. Merritt was requested by the Governor to undertake the direction of the Selective Service Act registration in California, and shortly after he was called to be Food Administrator for the State of California. His brilliant and unqualified success in these two undertakings has placed him in the front rank of business administrators in the State. His sympathy with students and student interests made his office far more than a Comptrollership. On Commencement Day of 1919 the Regents conferred upon him the honorary degree of LL.D., with the following characterization: Variousy tested and found not wanting; wise in counsel—masterly in deed; competent to set the seal of success."

Experiment with Range Cattle:

The action of the Dean of the College of Agriculture was approved and confirmed in having commenced an experiment with range cattle, authorized by a bill passed by the State Legislature in 1916 carrying an appropriation of \$60,000, this experiment being designed to discover the proper relation between mountain and valley ranges and summer and winter feeding.

Lease with Barrette Brothers:

A lease with Barrette Brothers was authorized for 1700 acres of land near French Creek, about 447 acres in Green Valley, about 480 acres in Georgetown, and about 840 acres in the Cedar Grove district, for a period of seven years, until January 1, 1928, for the sum of \$4500 per year, the land being used for grazing purposes in connection with the above described experiment.

Affiliation Agreement with St. Luke's Hospital:

An affiliation agreement between the Regents of the University of California and the Board of Directors of St. Luke's Hospital was authorized, for the purpose of developing at St. Luke's Hospital a modern, useful medical center for the benefit of the people of that district of the city, to furnish improved facilities to physicians practicing in that part of the city; to establish and maintain modern clinics; to offer teaching opportunities to students of medicine, nursing and to special students, particularly in neuropsychiatry, and in every other way to foster and develop the hospital as a "Community Service Center" in matters pertaining to health.

Commission of Regent Rowell:

Regent Rowell presented his commission, dated March 1, 1920, whereby the Governor appointed him a member of the Board of Regents for a new term commencing on the date of the issuance of the commission.

Death:

The Secretary reported with regret the death of Regent Isaias W. Hellman, and it was voted to adopt the following resolution:

"With deep sense of loss to University and community, the Board hereby makes record of the death, on April ninth, 1920, of Isaias William Hellman, Regent of the University for an almost continuous service of thirty-seven years.

"It was as successor to Mr. D. O. Mills that he received in July, 1881, —and at the hands of Governor Perkins, his first appointment to the Regency. He esteemed the office to represent a most serious public duty and he was seldom absent from the meetings of the Board except when outside the state, and for these occasions with a punctiliousness characteristic of all his doings he always took pains to request of the Board a leave of absence. He always followed carefully the business of the meetings as long acquaintance with the financial affairs of the University enabled him to do;—but his interest was by no means restricted to mortgages and budgets. He had definite ideas of what the community had a right to expect of its universities. He knew, furthermore, what it was reasonable in demanding, and what were in this matter the limits set by good common sense. Though he was a practical man and had in his earlier days known what it means to struggle and to toil, he had no mind toward withholding his support from the noblest and finest things in human education, neither would he close a door in the face of any student who sought after the best. This he has expressed in the founding of scholarships through which he has provided in perpetuity education for four students.

"He was born in Reckendorf, Bavaria, in October, 1842. Here until he reached the age of seventeen he received the training of what we should call high school and junior college. In those schools, accuracy, discipline, and duty lay at the base.

"When now in 1859, seventeen years of age, he migrated to Los Angeles into the great abounding hope of a new country, he definitely possessed certain qualities which, wherever he acquired them, made men trust him. In the unsteadiness of flux of the new country most men took moral risks; he held himself only the tighter in hand. In finance most men were touched with haste, if not frenzy; he found in the situation need only for heightened caution and plain honesty. Especially did he feel the typical responsibility of the trustee and the banker, when caring for the money of other people.

"In bank and in University, in friendship and in home, he believed in the things that being sound abide."

MAY, 1920

Petition for Dormitories:

A petition asking for the construction of dormitories at the University, signed by 4822 enrolled students, was presented to the Regents.

Boalt Trust:

The Finance Committee reported the receipt and acceptance from Charles S. Wheeler and Charles W. Slack, surviving trustees of the estate of Mrs. Boalt, of a deed to a lot on Hyde street in the City of San Francisco in full settlement of the \$30,000 due the Regents on the Boalt Trust for the erection of Boalt Hall.

Commission, Regent Fleishhacker:

Regent Fleishhacker presented his commission, dated March 1, 1918, whereby the Governor appointed him as a member of the Board of Regents for a new term commencing on the date of the issuance of the commission.

JUNE, 1920

Deeds, Lick Observatory Lands:

Authorization was given for the execution of the following deeds and lease to the Lick Observatory lands:

(1) Deed from the Regents of the University of California to R. F. Morrow Land and Live Stock Company, for 30 acres.

(2) Deed from R. F. Morrow Land and Live Stock Company to the Regents of the University of California for 40 acres.

(3) Lease from the Regents of the University of California to R. F. Morrow Land and Live Stock Company of 790 acres.

The purpose of these deeds and lease was to straighten out certain unsatisfactory boundaries between the Lick Observatory lands and adjoining properties.

Lease to Sandy B. Sumner:

Authority was granted for the execution of a lease to Sandy B. Sumner of 295.29 acres of land in San Luis Obispo County at an annual rental of \$75, the lease to include a reservation of any mineral rights and a stipulation to the effect that the land may be sold on one year's notice to the lessee.

Sale of "Alexander Agassiz":

The action of the Assistant Secretary was approved and confirmed having signed a satisfaction and release of mortgage and eighteen promissory notes, without recourse, in connection with the sale of the "Alexander Agassiz" to Mr. Joseph Mesmer. The Regents received \$6600 under this arrangement, being the full amount due them on the sale of the boat.

Lease of Whittier Pathological Laboratory:

The President and Secretary of the Board of Regents were authorized to execute a lease between the State Department of Agriculture and the Regents covering the buildings and grounds formerly used as a pathological institute at Whittier, for a nominal rental, for a period of three years.

Contract for Study of Poultry Diseases:

Authority was granted for the execution of a contract with certain poultrymen at Petaluma covering a coöperative arrangement for the study of poultry diseases.

Purchase of Nurses' Home:

The Assistant Secretary and Attorney of the Regents were authorized to make all necessary arrangements and the President and Assistant Secretary to execute all necessary documents for the purchase of the residence for nurses, at Third and Parnassus avenues, San Francisco, for not to exceed \$150,000.

Division of Department of Home Economics:

On the recommendation of the President, the Department of Home Economics was divided into two independent departments, to be known as the Department of Household Art and the Department of Household Science. The change involved no change of rooms or of material and equipment.

Agreement with Chaffey Union High School and Junior College of Agriculture:

The President reported an agreement between the University of California and the Chaffey Union High School and Junior College of Agriculture for the purpose of making available to the Division of Vocational Education of the University facilities under the control of the Board of Trustees of the Chaffey Union High School District, for the purpose of training teachers under the Smith-Hughes Act.

AUDITOR'S CERTIFICATE

To the Finance Committee of the

Board of Regents of the University of California.

DEAR SIRs: The books and accounts of the University of California have been audited for the year ended June 30, 1920, and we certify that the Balance Sheet of June 30, 1920, the statement of Income and Expenditures for the year ended June 30, 1920, and the accompanying schedules are in accordance therewith, and, in our opinion, correctly exhibit the financial condition of the University.

The investment securities have all been examined, and agree with the records.

The income from the Trust Funds has been expended in accordance with the specified conditions of the various trusts.

MCLAREN, GOODE & Co.,

Certified Public Accountants.

SAN FRANCISCO, CALIFORNIA,

December 21, 1920.

BALANCE SHEET

ASSETS

Schedules

Real Estate and Improvements:		
"A"	Real Estate in Berkeley	\$1,604,822.44
"B"	Buildings and Improvements in Berkeley ...	5,742,167.10
"C"	Real Estate and Improvements not in Berkeley	4,159,942.91
		<hr/> \$11,506,932.45
Equipment:		
	General	\$3,204,899.83
	Bancroft Library	250,005.00
		<hr/> 3,454,904.83
Inventories—Stores on hand:		
	Storehouse—Berkeley	\$19,408.30
	University Hospital Stores	75,963.40
	University Farm Stores	25,000.00
		<hr/> 120,371.70
Investments:		
"D"	Notes Receivable	\$445,689.99
"E"	Bonds	1,375,921.00
"F"	Stocks	357,471.50
"G"	Real Estate held as Investments	3,736,837.23
"H"	Miscellaneous Loans and Contracts	828,967.79
		<hr/> \$6,744,887.51
Suspense Account—Montgomery Avenue Bonds		21,999.00
		<hr/> 6,766,886.51
Liberty and Victory Loan Bonds—Account Stephens Memorial		16,900.00
"I"	Departmental and Other Expenditures carried forward	340,756.66
"J"	Amounts due from State of California under various appropriations	335,376.27
"K"	Sundry Debtors	309,499.42
"L"	Cash on hand	265,608.78
		<hr/> \$23,117,236.62
		<hr/>

[Schedule No. 12]

EDUCATION AND RESEARCH

Various Departments at Berkeley:

Expenditures from General Funds	\$1,055,962.20
Expenditures from Endowment Income	54,049.87
Expenditures from Donations	22,939.65
Expenditures from Morrill Fund	22,500.09
Expenditures from Fees, etc.	28,742.87
	<hr/>
	\$1,184,194.68

Agricultural Departments:

Expenditures from Adams Fund	\$15,000.00
Expenditures from Hatch Fund	15,000.00
Expenditures from Endowment Income	36,771.13
Expenditures from Smith-Lever: Federal	57,828.97
Expenditures from Smith-Lever: State	47,828.97
Expenditures from State Appropriation	592,863.20
Expenditures from Federal Extension Fund	27,593.64
Expenditures from Morrill Fund	27,499.91
Expenditures form Departmental Sales	10,039.86
	<hr/>
	830,425.68

Medical School and Hospitals:

From General Funds	\$361,418.29
From University Hospital Earnings	333,432.54
From Hahnemann Hospital Earnings	132,282.03
From Endowment Income	11,472.33
From State Appropriation	49,999.92
From Donations	80.50
From Radium Loan	58,523.01
	<hr/>
	947,208.62

Dental Department:

From General Funds	\$5,000.00
From Fees, Deposits and Infirmary Receipts	55,593.84
From Students' Special Deposit Account	2,087.33
From Donations	410.32
	<hr/>
	63,091.49

Hooper Foundation—Medical Research

\$40,326.54

Hooper Foundation—Biological Research

96.31

40,422.85

Lick Observatory:

From General Funds	\$42,534.30
From Donations	8,785.98
	<hr/>
	51,320.28

Los Angeles Medical Department:

From General Funds	\$10,000.00
From Fees	6,766.38
From Dispensary Receipts	3,811.66
	<hr/>
	20,578.04

Carried forward \$3,137,241.64

[Schedule No. 12—Continued]

<i>Forward</i>		\$3,137,241.64	
University Extension:			
From University Extension—Berkeley	\$79,014.01		
From University Extension—Los Angeles	30,187.34		
From State Appropriation	49,999.92		
From Donations	1,260.00		
			160,461.27
Scripps Institution:			
From General Funds	\$5,000.00		
From State Appropriation	17,499.96		
From State Appropriation—Kelp Act	44.37		
From Donations	15,138.09		
From Rents and Miscellaneous Receipts	5,690.46		
			43,372.88
Wilmerding School:			
From Endowment Income	\$23,968.92		
From Withdrawal from Endowment Fund	6,674.57		
From Sales of Manufactures	165.05		
			30,808.54
Summer Session and Intersession:			
Intersession 1919—refund of income	\$127.00		
Intersession 1920	12,268.43		
Intersession Dentistry 1920	600.00		
Summer Session 1919	56,340.90		
Summer Session 1920	64,042.53		
Summer Session Civil Engineering	2,986.55		
Summer Session Mechanics 1919	625.55		
Summer Session Los Angeles 1919	22,830.03		
Summer Session Los Angeles 1920	29,184.49		
			189,005.48
Southern Branch:			
From State Appropriation	\$234,021.92		
From Fees and Miscellaneous Receipts	22,611.01		
			256,632.93
Smith-Hughes Act—Vocational Teacher Training:			
From Smith-Hughes—Agricultural	\$13,970.53		
From Smith-Hughes—Industrial	8,686.41		
From Smith-Hughes—Southern Branch	6,454.69		
			29,111.63
			<u>\$3,846,634.37</u>

[Schedule No. 13]

DISBURSEMENTS FOR SCHOLARSHIPS, FELLOWSHIPS AND PRIZES

Joseph Bonnheim Scholarships	\$4,320.00
Edith J. Claypole Research Fellowship	1,200.00
P. Charles Cole Scholarship	125.00
Emily Chamberlain Cook Prize in Poetry	50.00
W. R. Davis Scholarships	625.00
John and Bertha Dolbeer Scholarships	800.00
Helen DuBois Scholarships	300.00
DuPont Fellowship	750.00
Cora Jane Flood Fellowship	500.00
James M. Goewey Fellowship	600.00
Phoebe A. Hearst Scholarships	2,250.00
I. W. Hellman Scholarships	3,500.00
Cornelius B. Houghton Scholarship	160.00
Samuel C. Irving Prize	25.00
L. W. Jongeneel Scholarship	125.00
Albert Sidney Johnston Scholarship	120.00
Carrie M. Jones Scholarships	4,000.00
Martin Kellogg Fellowship	1,200.00
Wm. Watt Kerr Scholarship	400.00
Knights of Columbus Scholarships	3,578.60
Geo. Ladd Prix de Paris in Music	1,900.00
LeConte Memorial Fellowship	1,200.00
John W. Mackey, Jr. Fellowship	1,200.00
Bernard Nathan Scholarships	937.50
Newman Hall Essay Prize	100.00
Native Sons of the Golden West Fellowships	3,000.00
Frank M. Pixley Scholarship	150.00
Presbyterian Church Scholarship	150.00
James Rosenberg Memorial Scholarship	600.00
San Jose High School Scholarship	125.00
Senior Class Prize	25.00
Sheffield Sanborn Scholarships	400.00
San Francisco Girls' Union Scholarships	290.00
State of California Scholarships	3,400.00
Horatio Stebbins Scholarship	220.00
Levi Strauss Scholarships	3,525.00
Bertha Henicke Taussig Memorial Scholarship	400.00
Willard Thompson Memorial Scholarships	4,200.00
University Fellowships	4,000.00
University Medal	160.00
Enid Williams Memorial Scholarship	250.00
Whiting Fellowship	700.00
Y.W.C.A. Scholarship	500.00

\$52,061.10

[Schedule No. 14]

MISCELLANEOUS EXPENDITURES NOT CLASSIFIED

From Departmental Sales and Miscellaneous Receipts:

Agricultural:

Chicken Pox Vaccine Sales	\$1,628.91
Dairy	21,705.11
Dairy Certification—Alameda	1,234.73
Dairy Certification—San Francisco	1,640.39
Fertilizer Control	6,620.22
Hog Serum Sales	17,863.30
University Farm Income	331,316.62
Veterinary Sales	294.86
	<hr/>
	\$382,304.14

Music and Drama 38,269.65

Southern Branch—Cafeteria 23,734.84

\$444,308.63

Various:

Horgan Bequest Expenses	\$.37
Overs and Shorts in Cash	113.94
Rental of Hyde Street Property, San Francisco—Legal Expenses	152.90
Riverside Farm Site Expenses	280.64
Sale of "Agassiz"—Scripps Institution—Legal Expenses, etc.	594.21
Stephens Memorial Expenses	602.74
Stephens Memorial Expenses—Oil Painting	1,000.00
Memorial Tablet—Marjorie Green Foster	103.00
Pensions—Carnegie Institution	29,466.27
Retiring Allowances (General Funds)	7,339.04
New Roads—Hilgard Hall to Hearst Avenue—advertising	15.00
Interest on Berkeley Real Estate Investment—(Transfer from Permanent Building Fund to Endowment Income to make income equal to 5% on the valuation of \$83,405.68)	2,641.33
Building Bonds Overdraft—additional charge caused by assessments paid on Kennedy Mining & Milling Co. Stock and corresponding increase in Doe Library Fund	420.00
	<hr/>
	42,729.44

\$487,038.07

[Schedule No. 15]

PAYMENTS TO BENEFICIARIES OF TRUST FUNDS, ETC.

Payments to Secretaries:

Alumnae Y.W.C.A. of U. of C.	\$30.12	
Class of 1909 Endowment	35.94	
Class of 1909 Loan	23.82	
Class of 1913 Fund	283.65	
Class of 1915 Fund	213.99	
Y.W.C.A. Endowment	326.28	
		<hr/>
		\$913.80

Direct Charges against Income on Funds:

Therese F. Colin European Fellowship Fund No. 2—Pay- ment of income to Lucie F. Hopkins	\$108.35	
Cora Jane Flood Endowment—Water bills, Bear Gulch Water Co.	2,977.01	
Furrey Endowment—Legal Expenses	4.66	
Howison Fund—Expenses, clearing lots	6.00	
		<hr/>
		3,096.02

Annuities:

Hilgard Fund (Alice Rose Hilgard)	\$2,400.00	
Howison Fund (Lois T. Howison)	2,700.00	
		<hr/>
		5,100.00
		<hr/>
		\$9,109.82
		<hr/> <hr/>

[Schedule No. 16]

ADDITIONS TO ENDOWMENT FUNDS

Gifts for Endowment as per Schedule 7c \$530,343.86
 Income from Investments added to Funds:

Alumni Hall Fund	\$762.56
Associated Women Students Fund	71.25
Philo Sherman Bennett Prize Fund	112.75
Edward Booth Loan Fund	1.32
John Burns Loan Fund .....	.73
Class of 1881 Loan Fund	34.62
Class of 1886 Loan Fund	145.50
Class of 1895 Loan Fund	16.41
Class of 1897 Loan Fund	21.52
Class of 1898 Loan Fund	4.87
Class of 1903 Loan Fund	28.19
Class of 1908 Endowment Fund	12.58
Edith Claypole Memorial Research Fund	159.50
P. Chas. Cole Scholarship Fund	31.75
Emily Chamberlain Cook Prize Fund	22.76
E. A. Denicke Loan Fund	413.65
Dental Endowment Fund	414.21
F. W. Dohrmann Memorial Loan Fund	304.16
Grubstake "W" Loan Fund	11.67
Hearst Publication Fund	206.82
Hindusthanee Loan Fund	4.60
Loan Fund No. 3	2.11
John W. Mackay, Jr. Endowment Fund	14,036.55
Medal Loan Fund	12.11
Memorial Gift Fund—Class of 1916	96.82
Men's Dormitory Fund	32.42
Mining Students Loan Fund	228.46
Nalanda Loan Fund	1.04
Napa Seminary Loan Fund	15.64
Parker Memorial Fund	5.99
Prytanean Fund (Students' Union)	24.31
Prytanean Fund (Housing Facilities)	76.60
Prytanean Fund (Hospital)	17.55
Ralph D. Robertson Memorial Loan Fund	6.44
Herman Royer Endowment Fund	322.95
San Joaquin Women's Club Loan Fund .....	.95
Jane K. Sather Fund awaiting distribution	1,769.96
Jane K. Sather Classical Chair Fund	1,431.10
Jane K. Sather Historical Chair Fund	4,715.20
Snell Seminary Loan Fund	1.47
Special Senior Class Loan Fund	3.88
Students' Coöperative Society Fund	643.79
Walcott Loan Fund	8.33
F. J. Walton Memorial Loan Fund	482.06
Women's Dormitory Fund	172.17
Xi Psi Phi Loan Fund	4.76

 26,894.08

Carried forward \$557,237.94

[Schedule No. 16—Continued]

Forward	\$557,237.94	
Miscellaneous Income added to Funds:		
Class of 1886 Loan Fund—		
Payment of note previously written off	\$45.00	
Class of 1909 Loan Fund—		
Payment of note previously written off	55.00	
Doe Library Fund—		
Increase to equal assessments on stock	420.00	
Herzstein Fund for Physiological Research—		
Transfer of balance on donation account and proceeds of sale of property	3,775.76	
Kearney Bequest—		
Increase to equal increase in fixed assets of Kearney Vineyard	27,407.71	
Medal Loan Fund—		
Overpayment of note	1.00	
		31,704.47
		<u>\$588,942.41</u>

[Schedule No. 17]

INCOME AND EXPENDITURES PRIOR TO JUNE 30, 1919
BROUGHT FORWARD

Income:

Fund Income Accounts—Balance Sheet Schedule "N"	\$56,098.09	
Fund Income Accounts—Balance Sheet Schedule "Q"	2,047.12	
		\$58,145.21
Donation Accounts—Balance Sheet Schedule "O"		46,714.35
Balances for Specific Purposes—Balance Sheet Schedule "P"	\$158,514.50	
Less Bond Interest	\$24,922.50	
Mortgage Interest Undistributed	2,711.93	
Doctors' Thesis Deposit	350.00	
Key Deposits	465.03	
Dentistry Fees and Deposits	535.00	
Infirmary Operations and Dental Work	8,651.29	
Plan Deposits	243.00	
		37,878.75
		120,635.75
Permanent Building Fund		51,817.98
		\$277,313.29

Expenditures:

Departmental and Other Expenses carried forward as per Balance Sheet Schedule "H"	\$340,294.65	
Less Summer Session Civil Engineering Com-		
missary	\$120.69	
Hotel Rafael Maintenance	12,041.36	
Radium Fund	7,570.21	
Suspense Account—Commission on Lease (Oakland)	13,301.50	
Suspense Account—Commission on Lease (Sutter Street, S. F.)	1,093.50	
Suspense Account—Commission on Lease (Sutter Street, S. F.)	2,794.50	
Expenditure Account 1919-20 Appropriations	13,023.95	
		49,945.71
		\$290,348.94
Vocational Education—Federal Board		15.30
University Hospital Stores		34,454.13
Federal Council of Defense		187.20
Hooper Foundation—Advances for Maintenance of Laboratory		221,070.94
Balance as per Report for 1918-1919		\$546,076.51
Add Boalt Hall Subscriptions—omitted from previous reports		36,544.20
		\$582,620.71

[Schedule No. 18]

INCOME AND EXPENDITURES PRIOR TO JUNE 30, 1920

CARRIED FORWARD

Income:

Fund Income Accounts—Balance Sheet Schedule "O"	\$120,442.85	
Fund Income Accounts—Balance Sheet Schedule "R"	2,515.11	
		\$122,957.96
Donation Accounts—Balance Sheet Schedule "P"		182,744.04
Balances for Specific Purposes—Balance Sheet Schedule "Q"	\$169,090.65	
Less Bond Interest	\$24,922.50	
Doctors' Thesis Deposits	875.00	
Key Deposits	1,123.73	
Dentistry Fees and Deposits	977.50	
Infirmary Operations and Dental Work	7,341.03	
Plan Deposits	243.00	
Summer Session Civil Engineering Com- missary, 1919	18.78	
Summer Session Civil Engineering Com- missary, 1920	399.04	
		35,900.58
		133,190.07
Agriculture		571.99
Permanent Building Fund		60,934.25
		\$500,398.31

Expenditures:

Departmental and Other Expenses carried forward as per Balance Sheet Schedule "I"	\$340,756.66	
Less Suspense Account—Nurses' Home, Uni- versity Hospital	\$158.27	
Sale of "Tethelin"	32.56	
Suspense Account—Commission on Lease (Oakland)	13,014.50	
Suspense Account—Commission on Lease (Sutter Street, S. F.)	1,012.50	
Suspense Account—Commission on Lease (Sutter Street, S. F.)	2,587.50	
Expenditures Account 1920-21 Appro- priations	19,843.67	
		\$36,649.00
		\$304,107.66
Boalt Hall Subscriptions		6,544.20
Federal Council of Defense		187.20
Hooper Foundation—Advances for maintenance of laboratory		251,493.79
Radium Loan—Medical School and Hospitals		42,332.40
Scientific Research		526.55
Pensions—Carnegie Institution		1,899.96
		\$607,091.76

STATISTICS OF THE INFIRMARY
COMPILED BY THE UNIVERSITY PHYSICIAN

INFIRMARY SUMMARIES

August 14, 1919 to May 12, 1920

DISPENSARY

	Men	Women	Total
Individuals treated.....	4,134	2,978	7,112
Number of treatments.....	22,925	15,467	38,392
Number of diagnoses.....	4,128	2,980	7,108
Number of smallpox vaccinations.....	489	327	816
Number of students entitled to treatment during year.....			9,991
Number of days open.....			273
Average number patients treated daily.....			140.0
Average number treatments per patient.....			5.0
Percentage of students treated.....			71%

HOUSE PATIENTS

	Men	Women	Total
Discharged—			
Well.....	643	429	1,072
Relieved.....	192	138	230
Not relieved.....	9	6	15
Deceased.....	1	0	1
Total number of Infirmary days.....			5,765
Number of days open.....			273
Total number of diagnoses.....			727
Total number of individuals.....			968
Students in Infirmary more than once during year.....			65
Average stay in days.....			5.9
Average number of patients per day.....			21.1
Largest number of patients in one day.....			71
Surgical cases.....			295
Operations.....			202
Anaesthesia (general).....			68
Patients examined by X-ray.....			372
Prescriptions.....			470
Laboratory reports—			
Urine analyses.....			2,195
Nose and throat cultures.....			1,052
Sputum.....			111
Blood counts.....			1,137
Feces and stomach.....			83
Urethral and prostatic smears.....			122
Wassermanns.....			98
Miscellaneous.....			90

DENTAL DEPARTMENT

August 14, 1919 to May 12, 1920

Gold fillings—inlay.....	79
Gold fillings—malletted.....	2
Amalgam fillings.....	555
Synthetic fillings.....	165
Cement fillings.....	123
Temporary fillings.....	326
Prophylaxis.....	336
Extractions.....	186
Root canal fillings.....	58
Acolyte inlays.....	4
X-rays.....	453
Pulp removals.....	29
Treatments (miscellaneous).....	173
Pulp capping.....	18
Root amputations.....	6
Removal impacted molars.....	8
Reset.....	15
Wisdom teeth, gum lanced.....	30
Broken appointments.....	68
Abscess lanced.....	21
Fractured jaw wired together.....	1

INFIRMARY REPORT, 1919-20

MEN AND WOMEN

I. GENERAL DISEASES: (International Classification)	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
1B. Anti-typhoid inoculation.....	3	....	3	....	....	....
4. Malaria.....	3	....	3	3	1	4
6. Measles.....	4	2	6	22	25	47
7. Scarlet fever.....	....	....	....	2	2	4
9. Diphtheria and croup—						
Diphtheria.....	....	....	....	12	....	12
Diphtheria carrier.....	10	5	15	2	9	11
10. Influenza.....	41	15	56	44	94	138
18. Erysipelas.....	1	....	1	2	....	2
19. Other epidemic diseases—						
Chicken pox.....	....	3	3	6	2	8
Mumps.....	30	7	37	48	16	64
Vaccination—						
Vaccinia.....	249	362	611	3	....	3
Vaccinoid.....	29	26	55	....	1	1
28. Tuberculosis of the lungs.....	4	3	7	2	2	4
34. Tuberculosis of other organs—						
Tuberculosis of—						
Kidney.....	....	....	....	1	....	1
38. Gonococcus infection—						
b. Gonococcus infection of—						
Epididymis.....	2	....	2	....	....	....
Urethra.....	1	....	1	....	....	....
Gonorrhea.....	7	1	8	3	....	3

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
45. Cancer and other malignant tumors of other organs—						
<i>c.</i> Epithelioma of face.....	1	1	2	....	....	....
46. Other tumors—						
Tumor of—						
Back.....	....	....	....	1	....	1
Breast.....	....	1	1	....	2	2
Granuloma.....	....	2	2	....	....	....
Neck.....	2	....	2	....	....	....
Nose.....	....	1	1	....	....	....
Fibroadenomata of breast—						
Lipoma, arm, excision of.....	1	....	1	....	....	....
Sebaceous.....	14	10	24	....	....	....
Mole.....	2	2	4	....	....	....
Penus.....	4	....	4	....	....	....
47. Acute articular rheumatism.....	7	....	7	3	....	3
54. Anaemia.....	....	3	3	....	....	....
66. Paralysis without specified cause—						
Paralysis of—						
Arm.....	....	1	1	....	....	....
68. Other forms of mental alienation—						
Constitutional Inferiority.....	1	....	1	....	....	....
73. Neuralgia and neuritis—						
Hysteria.....	....	2	2	1	1	2
Neuralgia.....	11	3	14	....	....	....
Neuritis.....	3	1	4	1	....	1
Pleurodynia.....	1	....	1	....	....	....
Paralysis.....	....	....	....	1	....	1
74. Other diseases of the nervous system—						
Neurotic edema.....	....	2	2	....	....	....
Angiospastic oedema.....	1	....	1	....	....	....
Hiccoughs.....	....	1	1	....	....	....
Migraine.....	8	....	8	....	....	....
Neurasthenia.....	5	7	12	....	7	7
Syncope.....	1	2	3	....	....	....
Singultus.....	3	....	3	....	....	....
75. Diseases of the eyes and their adnexa—						
<i>a.</i> Conjunctivitis—						
Acute.....	25	3	28	....	1	1
Chronic.....	24	19	43	1	1	2
<i>c.</i> Other diseases of the eye and their adnexa—						
Simple hyperopic.....	10	9	19	....	....	....
Compound hyperopic.....	44	34	78	....	....	....
Simple myopic.....	17	21	38	....	....	....
Compound myopic.....	17	10	27	....	....	....
Mixed astigmatism.....	6	1	7	....	....	....
Blepharitis.....	6	9	15	....	....	....
Cornea.....	3	....	3	....	....	....
Chalazion.....	3	....	3	....	....	....
Chalazion, operation for.....	1	....	1	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Exophoria.....	1	....	1	....	....	....
Foreign body.....	22	10	32	....	....	....
Hordeolum.....	....	15	15	36	....	36
Hyperopia.....	46	17	63	....	....	....
Iritis.....	....	1	1	....	....	....
Myopia.....	7	9	16	1	....	1
Subconjunctival hemorrhage.....	2	....	2	....	....	....
76. Diseases of the ears—						
Cerumen, accumulation of.....	74	50	124	....	....	....
Haematoma of ear.....	7	1	8	....	....	....
Myringitis.....	8	2	10	....	....	....
Otitis media, acute.....	10	8	18	1	1	2
Otitis media, chronic.....	1	....	1	1	1	2
Rupture of tympanum.....	2	....	2	....	....	....
III. DISEASES OF THE CIRCULATORY SYSTEM:						
b. Endocarditis, chronic.....	....	....	....	2	1	3
Dilatation of heart.....	1	1	2	....	....	....
Mitral regurgitation.....	1	....	1	....	....	....
Mitral insufficiency.....	....	2	2	....	1	1
Mitral stenosis.....	....	5	5	....	3	3
83. Diseases of the veins—						
Haemorrhoids.....	18	2	20	....	1	1
Haemorrhoids, operation for.....	....	....	....	3	1	4
Phlebitis.....	209	134	344	46	9	55
Varicocele.....	3	....	3	1	....	1
Varicocele, operation for.....	....	....	....	1	....	1
Varicose veins.....	1	2	3	....	....	....
Varicose veins, operation for.....	....	....	....	1	....	1
84. Diseases of the lymphatic system—						
Adenitis.....	5	4	9	1	....	1
Cervical.....	6	5	11	1	2	3
Lymphadenitis.....	2	1	3	1	....	1
85. Haemorrhage—						
Epistaxis.....	2	2	4	....	....	....
Palpitation.....	2	....	2	....	....	....

IV. DISEASES OF THE RESPIRATORY SYSTEM:

86. Diseases of the nasal fossae—						
Adenoids.....	2	2	4	....	....	....
Adenoids, operation for.....	....	....	....	3	2	5
Catarrh, tubotympanic.....	3	....	3	....	....	....
Deviated septum.....	1	2	3	....	....	....
Deviated septum, submucous resection for.....	11	1	12	18	1	19
Polyps, operation for.....	1	....	1	....	....	....
Turbinate.....	1	2	3	....	....	....
Turbinate, operation for.....	3	2	5	....	....	....
Rhinitis.....	1019	684	1703	28	7	35
Spur, operation for.....	3	2	5	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
87. Diseases of the larynx—						
Laryngitis.....	64	93	157	2	9	11
88. Diseases of the thyroid body—						
Hyperthyroidism.....	1	7	8	....	1	1
89. Acute bronchitis—						
Bronchitis.....	54	7	61	10	5	15
Tracheitis.....	175	97	272	51	20	71
90. Chronic bronchitis.....	73	3	76	74	....	....
91. Bronchopneumonia.....	....	....	....	3	1	4
92. Pneumonia—						
Pneumonia, lobar.....	1	....	....	2	2	4
93. Pleurisy.....	11	7	18	4	2	6
Empyema, operation for.....	....	....	....	1	....	1
96. Asthma.....	12	3	15	4	....	4
98. Other diseases of the respiratory system—						
Hayfever.....	1	1	2	....	....	....
Hemoptysis.....	5	....	5	....	....	....

V. DISEASES OF THE DIGESTIVE SYSTEM:

99. Diseases of the mouth and adnexa—						
Gingivitis.....	4	2	6	....	....	....
Extraction of teeth.....	....	....	....	....	1	1
b. Other diseases of the mouth and adnexa—						
Stomatitis.....	7	3	10	1	....	1
Ulcer of mouth.....	8	9	17	....	....	....
100. Diseases of the pharynx—						
Abscess, tonsillar.....	....	....	....	....	1	1
Amygdalitis.....	93	116	209	43	22	65
Amygdalitis, operation for.....	....	....	....	59	40	99
Pharyngitis.....	643	450	1093	115	30	145
100. Vincents angina.....	2	2	4	1	....	1
Neurosis.....	1	....	1	....	....	....
100. Diseases of the pharynx, Cont'd—						
Uvula, elongation of, operation for.....	....	....	....	2	....	2
102. Ulcer of the stomach—						
Ulcer of the stomach.....	....	....	....	....	1	1
103. Other diseases of the stomach—						
Fermentation, gastric.....	26	11	37	3	11	14
Gastritis, acute.....	5	4	9	....	....	....
Visceroptosis.....	....	3	3	....	1	1
105. Diarrhoea and enteritis—						
a. Ulcer of Duodenum.....	4	....	4	1	....	1
b. Duodenitis.....	5	4	9	....	....	....
Enteritis.....	25	2	27	8	....	8
Fermentation, intestinal.....	....	2	2	....	....	....
Gastroenteritis.....	2	4	6	2	2	4
Gastroduodenitis.....	....	7	7	....	....	....
Indigestion.....	1	....	1	....	....	....
Uncinariosis.....	4	....	4	8	4	12

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
107. Intestinal parasites—						
Diarrhoea.....	2	....	2	....	....	....
Oxyuris vermicularis.....	....	....	....	1	....	1
Tape worm.....	2	1	3	3	1	4
Dysentary.....	9	1	10	....	....	....
Amebic.....	18	....	18	7	....	7
Amebic dysentary carrier.....	11	2	13	....	....	....
Trichostronges.....	1	....	1	....	....	....

IV. APPENDICITUS:

108. Appendicitus, acute.....	2	4	6	9	2	11
Appendicitus, chronic.....	4	6	10	2	2	4
Appendicitus, operation for.....	....	....	....	9	9	18
109. Hernias—						
Hernia, inguinal.....	8	....	8	....	8	8
110. Diseases of the intestine—						
a. Enteroptosis.....	....	....	....	....	....	....
Fistula, in ano, operation for.....	7	....	7	3	....	3
Proctitis.....	1	....	1	....	....	....
b. Other diseases of the intestines—						
Autointoxication.....	3	....	3	....	....	....
Constipation.....	94	41	135	4	2	6
111. Acute yellow atrophy of the liver—						
Jaundice, catarrhal.....	3	....	3	1	...	1
114. Biliary calculi:—						
Cholelithiasis.....	1	....	1	....	....	....
115. Other diseases of the liver—						
Chalocystitis.....	1	....	1	....	....	....
117. Subluxation or dislocation of—						
Cartilage.....	4	....	4	....	....	....
117. Simple peritonitis—						
Adhesions of peritonaem.....	....	1	1	....	1	1

VI. NON-VENEREAL DISEASES OF THE GENITO-
URINARY SYSTEM AND ADNEX:

119. Acute nephritis—						
Nephritis, acute.....	....	....	....	2	....	2
120. Bright's disease—						
Albuminuria.....	6	....	6	2	....	2
122. Other diseases of the kidneys and adnexa—						
Pyelitis.....	2	....	2	....	....	....
Pyonephrosis.....	....	....	....	1	....	1
Cystitis, acute.....	2	2	4	2	2	4
125. Diseases of the urethra—						
Urethritis, acute.....	2	....	2	5	....	5
Non specific.....	4	....	4	....	....	....
126. Diseases of the prostate—						
Prostatitis—						
Chronic.....	4	....	4	....	....	....
Acute.....	....	....	....	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
127. Non-venereal diseases of the male genital organs—						
Balanoposthitis.....	6	....	6	....	....	....
Epididymitis.....	3	....	3	....	....	....
Orchitis.....	2	....	2	10	....	10
Phimosis.....	2	....	2	14	....	14
Seminal emissions.....	1	....	1	....	....	....
128. Uterine haemorrhage—						
Metrorrhagia.....	....	1	1	....	....	....
130. Other diseases of the uterus—						
<i>a.</i> Metritis.....	....	....	....	....	1	1
Endocervicitis.....	....	....	....	....	1	1
Cervicitis.....	....	1	1	....	....	....
<i>b.</i> Other diseases of the uterus—						
Amenorrhoea.....	....	27	27	....	....	....
Dilatation.....	....	....	....	....	1	1
Dysmenorrhoea.....	....	25	25	....	4	4
Leucorrhoea.....	....	1	1	....	....	....
132. Vulvitis.....	....	....	....	....	1	1
VII. THE PUERPERAL STATE:						
134. Accidents of pregnancy—						
Pregnancy.....	....	9	9	....	1	1
VIII. DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE:						
143. Furuncle—						
Carbuncle of—						
Arm.....	....	....	....	1	....	1
Face.....	....	....	....	1	....	1
Neck.....	7	....	7	2	....	2
Furuncle of—						
Abdomen.....	2	....	2	....	....	....
Arm.....	17	3	20	....	....	....
Axilla.....	2	6	8	....	....	....
Back.....	5	3	8	....	....	....
Breast.....	....	1	1	....	....	....
Buttock.....	6	7	13	....	....	....
Chest.....	....	3	3	....	....	....
Ear.....	8	8	16	....	2	2
Eyelid.....	4	....	4	1	....	1
Face.....	38	26	64	....	3	3
Finger.....	4	....	4	....	....	....
Forearm.....	....	1	....	....	....	....
Foot.....	3	....	....	....	....	....
Forehead.....	....	1	1	....	....	....
Hand.....	5	....	5	1	....	1
Head.....	20	....	20	1	....	1
Leg.....	9	....	9	1	....	1
Lip.....	2	3	5	....	1	1
Neck.....	105	5	110	6	....	6

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Cheek.....	....	1	1	....	....	....
Chin.....	....	10	10	14	7	21
Nose.....	14	2	26	....	1	1
Penis.....	1	....	1	....	....	....
Scalp.....	2	2	4	....	....	....
Shoulder.....	1	....	1	....	....	....
Thigh.....	8	2	10	....	....	....
Wrist.....	2	....	....	....	....	....
Miscellaneous.....	17	....	17	....	....	....
144. Acute abscess—						
Abscess of—						
Arm.....	1	1	2	....	....	....
Coccyx.....	....	....	....	....	1	1
Chin.....	1	....	1	....	....	....
Face.....	2	....	2	....	....	....
Finger.....	3	7	10	....	....	....
Foot.....	3	....	3	....	....	....
Head.....	1	....	1	....	....	....
Heel.....	2	2	4	....	....	....
Jaw.....	1	....	1	2	....	2
Leg.....	1	....	1	....	....	....
Neurotic.....	....	1	1	....	....	....
Peri-tonsillar.....	....	1	1	....	....	....
Toe.....	....	6	6	....	....	....
Teeth.....	3	....	3	....	....	....
Thigh.....	3	....	3	....	....	....
Cellulitis of—						
Ankle.....	1	....	1	....	....	....
Arm.....	1	1	2	1	1	2
Bunion.....	....	1	1	....	....	....
Claves.....	....	3	3	....	....	....
Ear.....	....	1	1	....	....	....
Face.....	....	1	1	....	....	....
Finger.....	14	23	37	2	....	2
Foot.....	9	6	15	4	....	4
Hand.....	2	....	2	....	....	....
Heel.....	2	1	3	....	....	....
Knee.....	....	....	....	1	....	1
Leg.....	5	....	5	....	....	....
Gland.....	....	....	....	....	1	1
Nail.....	....	1	1	....	....	....
Thumb.....	2	2	4	....	....	....
Toe.....	8	2	10	1	....	1
Miscellaneous—						
145. Other diseases of the skin and adnexa—						
a. Trichophytosis.....	63	2	65	2	....	2
b. Scabies.....	41	57	98	....	....	....
c. Other diseases of the skin and adnexa—						
Acne.....	79	64	143	1	....	1
Alopecia areata.....	6	4	10	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Bromidrosis.....	3	....	3	....	....	....
Callositas.....	3	....	3	....	....	....
Calvus.....	11	39	50	....	....	....
Comedo.....	1	2	3	....	....	....
Dermatitis.....	....	7	7	....	....	....
Dermatitis, venenata.....	75	183	258	10	18	28
Eczema.....	83	24	107	3	1	4
Erythema.....	7	....	7	1	....	1
Erythema, multiform.....	....	43	43	....	1	1
Herpes.....	32	18	50	....	....	....
Herpes zoster.....	4	1	5	1	....	1
Hyperidrosis.....	5	....	5	....	....	....
Ichthyosis.....	4	....	4	....	....	....
Impetigo contagiosa.....	61	22	83	....	....	....
Molluscum.....	7	....	7	....	....	....
Parasitic diseases—						
Pediculis.....	2	1	3	....	....	....
Pernio.....	....	11	11	....	....	....
Pompholix.....	....	3	3	....	....	....
Pityriosis rosea.....	12	3	15	....	....	....
Pruritis ani.....	4	....	4	....	....	....
Preinaphigris.....	....	1	1	....	....	....
145c. Parasitic diseases Con'td—						
Psoriasis.....	....	1	1	....	....	....
Roseola, unknown origin—						
Seborrhea.....	22	50	72	....	....	....
Urticaria.....	33	52	85	....	5	5
Wart of—						
Ankle.....	....	1	1	....	....	....
Face.....	1	....	1	....	....	....
Finger.....	4	11	15	....	....	....
Foot.....	41	31	72	....	....	....
Hand.....	32	40	72	....	....	....
Neck.....	3	....	3	....	....	....
Wrist.....	1	....	1	....	....	....
Nails—						
Ingrowing nail.....	25	3	28	....	....	....
Paronychia.....	8	10	18	....	....	....
Ingrowing hair.....	1	....	1	....	....	....
Blister of—						
Foot.....	4	3	7	....	....	....
Heel.....	....	1	1	....	....	....
Toe.....	3	....	3	....	....	....

IX. DISEASES OF THE BONES AND OF THE ORGANS
OF LOCOMOTION:

146. Diseases of the bones—

Ethmoid sinusitis.....	2	2	4	....	....	....
Frontal sinusitis.....	17	3	20	6	....	6

147. Diseases of the joints—

Arthritis.....	28	17	45	6	....	6
Synovitis.....	15	....	15	....	....	....
Loose body in knee joint, operation for	....	....	....	1	....	1

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
149. Other diseases of the organs of locomotion—						
Bursitis.....	5	7	12	....	....	....
Faulty statics.....	1	....	1	....	....	....
Ganglion.....	....	4	4	....	....	....
Hallux valgus.....	2	6	8	....	....	....
Metatarsalgia.....	3	1	4	....	....	....
Myalgia.....	1	1	2	....	....	....
Myostis.....	4	5	9	....	....	....
Pes planus.....	42	47	89	1	....	1
Pronated feet.....	....	23	23	....	....	....
Tenosynovitis.....	11	6	17	....	....	....
Torticollis.....	7	3	10	....	....	....
Pes valgus.....	....	....	....	....	....	....
Weak feet.....	....	4	4	....	....	....
C. MALFORMATIONS:						
Naevus.....	4	2	6	....	....	....
Congenital fistula.....	....	1	1	....	....	....
Scaro iliac.....	4	3	7	....	2	2
III. AFFECTIONS PRODUCED BY EXTERNAL CAUSES:						
a. Venomous bites and stings—						
Insect sting.....	16	18	34	1	....	1
Batalism.....	....	....	....	1	....	1
167. Burns—						
Burn of—						
Ankle.....	....	1	1	....	....	....
Arm.....	4	5	9	....	....	....
Cheek.....	....	1	1	....	....	....
Eye.....	2	....	2	1	....	1
Face.....	3	4	7	1	....	1
Finger.....	5	1	6	....	....	....
Foot.....	....	1	1	....	....	....
Hand.....	14	....	14	....	....	....
Lip.....	....	1	1	....	....	....
Leg.....	....	4	4	....	....	....
Mouth.....	4	....	4	....	....	....
Neck.....	1	1	2	....	....	....
Nose.....	2	....	2	....	....	....
Shoulder.....	....	1	1	....	....	....
Thigh.....	1	....	1	....	....	....
Wrist.....	2	5	7	....	....	....
168B. Absorption of deleterous gases—						
Nitrous oxide poisoning.....	....	....	....	....	1	1
171. Traumatism by cutting or piercing instruments—						
Arm.....	2	....	2	....	....	....
Chin.....	5	....	5	....	....	....
Eyebrow.....	6	....	6	....	....	....
Eyelid.....	2	....	2	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Finger.....	42	21	63	....	....	....
Foot.....	5	1	6	....	....	....
Hand.....	14	7	21	....	....	....
Head.....	8	1	9	....	....	....
Hip.....	2	....	2	....	....	....
Knee.....	1	....	1	....	....	....
Lip.....	10	1	11	....	....	....
Leg.....	2	2	4	....	....	....
Nose.....	3	....	3	....	....	....
Scalp.....	5	....	5	....	....	....
Toe.....	3	....	3	....	....	....
Thumb.....	....	2	2	....	....	....
Wrist.....	7	....	7	....	....	....
Traumatism by fall.....	....	3	3	....	....	....
Trauma nail, operation for.....	1	....	1	....	....	....
176. Injuries by animals—						
Cat bite.....	....	1	1	....	....	....
Dog bite.....	2	....	2	....	....	....
Coon bite.....	2	....	2	....	....	....
Rat bite.....	1	2	3	....	....	....
185. Fractures—						
a. Dislocations—						
Dislocation of—						
Arm.....	1	....	1	....	....	....
Ankle.....	....	2	2	....	....	....
Axilla.....	....	1	1	....	....	....
Clavicle.....	....	1	1	....	....	....
Colles.....	....	2	2	....	....	....
Elbow.....	....	....	2	....	....	....
Finger.....	5	....	5	....	....	....
Leg.....	2	....	2	....	2	2
Patella.....	....	....	....	....	1	1
Scaro-iliac.....	....	5	5	....	....	....
Shoulder.....	6	....	6	....	....	....
Wrist.....	3	....	3	....	....	....
Contraction of tendon, operation for—						
b. Sprain of—						
Ankle.....	64	69	133	6	1	7
Arch.....	....	....	....	1	....	1
Elbow.....	2	1	3	....	....	....
Finger.....	2	3	5	....	....	....
Foot.....	12	10	22	....	....	....
Hand.....	3	....	3	....	....	....
Knee.....	11	3	14	4	....	4
Scaro-iliac.....	....	2	2	....	....	....
Shoulder.....	5	1	6	....	....	....
Thumb.....	20	1	21	1	....	1
Toe.....	4	....	4	....	....	....
Wrist.....	17	3	20	1	....	1
Miscellaneous.....	10	2	12	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
c. Fracture of—						
Finger.....	4	....	4	....	....	....
Jaw.....	1	....	1	....	....	....
Leg.....	3	....	3	3	....	3
Nose.....	5	....	5	....	....	....
Skull.....	....	....	....	1	....	1
Toe.....	....	1	1	1	....	1
Vertebra, cervical.....	1	2	3	....	....	....
Wrist.....	2	....	2	....	....	....

186. Other external violence—

I. Organs and special structures—

Strain of muscle of—

Abdomen.....	6	....	6	....	....	....
Achilles tendon.....	2	2	4	....	....	....
Ankle.....	....	1	1	....	....	....
Arch.....	20	23	43	....	....	....
Arm.....	1	....	1	....	....	....
Back.....	16	12	28	....	....	....
Chest.....	12	....	12	....	....	....
Elbow.....	....	1	1	....	....	....
Eye.....	1	....	1	....	....	....
Finger.....	1	....	1	....	....	....
Foot.....	9	11	20	....	....	....
Hand.....	1	....	1	....	....	....
Knee.....	7	8	15	....	....	....
Leg.....	....	1	1	....	....	....
Neck.....	1	....	1	....	....	....
Scaro-iliac.....	1	5	6	....	....	....
Shoulder.....	7	....	7	....	....	....
Thigh.....	2	....	2	....	....	....
Toe.....	2	....	2	....	....	....
Wrist.....	2	2	4	....	....	....
Miscellaneous.....	16	....	16	....	....	....

II. Regions—

Concussion of—

Brain.....	....	....	....	2	....	2
Spine.....	....	1	1	....	....	....

Contusion and abrasion of—

Abdomen.....	1	....	1	....	....	....
Ankle.....	4	....	4	....	....	....
Arm.....	8	1	9	....	....	....
Back.....	2	1	3	1	1	2
Cheek.....	2	....	2	....	....	....
Chest.....	5	....	5	1	1	2
Chin.....	1	....	1	....	....	....
Elbow.....	8	4	12	....	....	....
Eye.....	2	....	2	1	1	2
Face.....	3	....	3	....	....	....
Finger.....	46	26	72	....	....	....
Foot.....	40	12	52	....	....	....
Hand.....	34	....	34	....	....	....

INFIRMARY REPORT, 1919-20—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Head.....	4	....	4	....	....	....
Heel.....	14	23	37	....	....	....
Hip.....	1	....	1	1	....	1
Knee.....	57	7	64	....	....	....
Leg.....	17	4	21	2	....	2
Lip.....	3	....	3	....	....	....
Nail.....	....	1	1	....	....	....
Nose.....	8	1	9	....	....	....
Shoulder.....	2	....	2	....	....	....
Thigh.....	1	....	1	....	....	....
Toe.....	18	8	26	....	....	....
Tongue.....	....	....	....	....	1	1
Wrist.....	....	2	2	....	....	....
Punctured Wound of						
Back.....	1	....	0	....	....	....
Foot.....	7	....	7	....	....	....
Hand.....	1	....	1	....	....	....
Knee.....	1	1	2	....	....	....
Thumb.....	1	....	1	....	....	....
Foreign body of—						
Arm.....	1	....	1	....	....	....
Ear.....	....	1	1	....	....	....
Eyelid.....	2	2	4	....	....	....
Finger.....	6	5	11	....	....	....
X. Foot.....	3	....	3	....	....	....
Hand.....	6	....	6	....	....	....
Leg.....	....	1	1	....	....	....
Throat.....	2	....	2	....	....	....
Under finger nail.....	....	2	2	....	....	....
Stomach.....	....	1	1	....	....	....

XIV. ILL-DEFINED DISEASES:

189. Unclassified or ill-defined—

a. Disease not specified or ill-defined

Headache.....	9	10	9	....	....	....
Insomnia.....	10	3	13	1	1	2

b. No disease—

Feigned disease—

No disease.....	51	43	94	....	17	17
No diagnosis.....	9	17	26	....	7	7
Post operation.....	2	1	3	1	1	2
Tooth extraction.....	....	....	....	....	1	1

INFIRMARY REPORT—(Continued)

WOMEN

DISEASES	Dispensary Patients				House Patients			
	No. cases	No. treat.	Med- ical	Surg- ical	No. cases	No. days	Med- ical	Surg- ical
100. Diseases of the pharynx—								
<i>a.</i> Abscess tonsillar.....	1	1	1	...	...	...	...	...
<i>b.</i> Tonsillectomy.....	...	...	...	...	2	2	...	2
<i>c.</i> Amygdalitis, acute.....	3	3	3	...	...	...	...	...
<i>d.</i> Pharyngitis.....	15	15	15	...	1	2	1	...
<i>e.</i> Tonsillitis.....	...	...	...	...	2	2	2	...
103. Diseases of the Stomach—								
Gastritis.....	2	3	2	...	...	...	...	...
105. Diarrhea and enteritis—								
Food disturbance.....	1	1	1	...	...	...	...	...
107. Intestinal Parasites—								
Dysentery.....	2	2	2	...	1	4	1	...
108. Appendicitis (subacute).....	2	3	2	...	1	10	1	1
110. Diseases of the Intestines—								
<i>b.</i> Constipation.....	4	4	4	...	...	...	...	...
124. Diseases of the Bladder—								
Cystitis.....	2	2	2	...	...	...	...	...
VI. NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ADNEXA								
128. Menorrhagia.....	1	1	1	...	...	...	...	...
130. Other diseases of the uterus—								
Amenorrhoea.....	2	2	2	...	...	...	...	...
Dysmenorrhoea.....	4	6	4	...	...	...	...	...
Leucorrhoea.....	2	2	2	...	...	...	...	...
VIII. DISEASES OF THE SKIN AND CELLULAR TISSUE:								
143. Furuncle of—								
Face.....	1	1	1	...	...	...	...	...
Arm.....	1	1	...	1	...	...	...	...

WOMEN

DISEASES

	DISEASES	Dispensary Patients			House Patients			
		No. cases	No. treat.	No. Med-ical	No. days	Med-ical	Surg-ical	Well
144.	Acute Abscess of—							Re-Not
	Thumb.....	1	4	...	1	...	...	lieved relvd.
	Heel.....	1	1	...	1	...	...	...
	Toe.....	1	1	...	1	...	...	...
	Other diseases of the skin and adnexa—							
145B.	Scabies.....	3	8	3	...	...	...	...
145C.	Acne.....	4	6	4	...	...	...	...
	Claves.....	3	3	3	...	...	...	...
	Herpes (simple).....	1	1	1	...	...	...	...
	Canker on lip.....	1	1	1	...	...	...	...
	Herpes of lip.....	1	1	1	...	...	...	...
	Wart on foot.....	2	2	2	...	...	...	...
	Dermatitis Venata.....	12	20	12	...	...	...	...
	Urticaria.....	3	3	3	...	...	...	...
	Ingrowing Hair.....	1	1	...	1	...	...	...
	Diseases of the bones—							
146.	Chr. Sinusitis.....	1	5	1	...	...	...	...
	Other diseases of the organs of locomotion—							
	Arthritis.....	1	1	1	...	...	...	...
	Pesplanes.....	4	6	4	...	...	...	...
149.	Flat ant. Arch.....	2	2	2	...	...	...	...
	Myositis.....	2	2	2	...	...	...	...
165A.	Venomous bites and stings.....	2	2	2	...	...	...	...
167.	Burns.....	3	3	3	...	...	...	...
	Traumatism by cutting or piercing instruments—							
171.	Palm of hand.....	1	1	1	...	...	...	...
	Face.....	1	1	1	...	...	...	...
178.	Punctured Wound of—							
	Finger.....	1	1	1	...	...	...	...

INFIRMARY REPORT—(Concluded)

WOMEN

DISEASES	Dispensary Patients				House Patients				
	No. cases	No. treat.	No. Med- ical	Surg- ical	No. cases	No. days	Med- ical	Surg- ical	Well relieved
185. Sprain of—									
Muscle.....	1	1	1	....	....	....	....	....	....
Ankle.....	7	12	7	....	....	....	....	....	....
Knee.....	3	5	3	....	....	....	....	....	....
Wrist.....	1	6	1	....	....	....	....	....	....
Foot.....	2	4	2	....	....	....	....	....	....
Forefinger.....	2	6	2	....	....	....	....	....	....
Other External Violence—									
186. Strain of—									
Arch.....	1	2	1	....	....	....	....	....	....
Eye.....	1	4	1	....	....	....	....	....	....
Knee.....	1	3	1	....	....	....	....	....	....
Splinter.....	1	1	1	....	....	....	....	....	....
Unclassified and ill-defined—									
189. Headache.....	2	2	2	....	....	....	....	....	....
Insomnia.....	1	3	1	....	....	....	....	....	....
No disease.....	2	2	2	....	....	....	....	....	....
Post operation.....	1	3	1	....	....	....	....	....	....

4. Malaria.....	1	...	...	...	1	3	...	...	1	...	...
28. Tuberculosis of lungs.....	1	8	1	...	...	...	...	...	...	...	...
34. Tuberculosis of other organs— Peritonitis.....	1	...	...	...	1	54	1	...	...	1	...
54. Anaemia.....	1	2	1	...	...	...	...	...	...	...	...
75. Diseases of the eyes— Conjunctivitis.....	2	6	2	...	...	...	...	...	...	...	...
75c. Hordeolum.....	1	1	1	...	...	...	...	...	...	...	...
Foreign body.....	1	1	1	...	...	...	...	...	...	...	...
Diseases of the ears— Myringitis.....	1	7	1	...	...	...	...	...	...	...	...
76. Cerumen.....	1	1	1	...	...	...	...	...	...	...	...
86. Diseases of the nasal fossea— Adenoids.....	1	1	1	...	...	...	...	...	...	...	...
86. Rhinitis.....	20	24	20	...	...	...	...	...	...	...	...
87. Laryngitis.....	1	1	1	...	...	...	...	...	...	...	...
89. Tracheitis.....	1	1	1	...	...	...	...	...	...	...	...
93. Pleurisy.....	1	1	1	...	2	5	2	...	...	2	...
DISEASES OF THE RESPIRATORY SYSTEM:											
96. Asthma.....	2	4	2	...	...	...	...	...	...	...	...
99A. Diseases of the mouth and adnexa— Stomatitis.....	1	1	1	...	...	...	...	...	...	...	...
100. Diseases of the pharynx— Hypertonsil.....	1	6	1	...	...	...	...	...	...	...	...
100. Amygdalitis.....	5	12	5	...	1	13	1	...	...	1	...
Pharyngitis.....	8	19	8	...	1	3	1	...	...	1	...
102. Ulcer of stomach.....	1	2	1	...	...	...	...	...	...	...	...
Other Diseases of the stomach— Gastric fermentation.....	1	2	1	...	...	...	...	...	...	...	...

INFIRMARY REPORT—(Continued)

MEN

DISEASES

DISEASES OF THE INTESTINES:

	Dispensary Patients			House Patients			
	No. cases	No. treat.	Med- ical	Surg- ical	No. cases	Med- ical	Surg- ical
107. Dysentary.....	1	2	1	...	...	...	...
108. Appendicitis.....	...	...	...	...	1	5	1
123. Calculi of the urinary passage— Renal calculus.....	1	2	1	...	...	...	...

DISEASES OF THE SKIN AND CELLULAR TISSUE:

143. Furuncle of.....	6	10	6	4	...	...	...
144. Abscess of— Neck .....	...	...	...	...	1	17	1
Cellulitis of— Foot.....	1	5	1	...	...	...	...
Toe.....	1	1	1	...	1	1	1

145. Other diseases of the skin and adnexa—

Posoriasis.....	1	1	1	...	...	...	...
Ringworm.....	2	2	1	...	...	...	...
Scabies.....	2	4	2	...	...	...	...
145c. Acne.....	3	6	3	...	...	...	...
Eczema.....	1	3	1	...	...	...	...
c. Dermatitis venanata.....	5	5	5	...	...	...	...
Pityriosis rosea.....	1	2	1	...	...	...	...
c. Wart of— Foot.....	1	1	1
Toe.....	1	4	1
Ingrowing nail.....	1	1	1

DISEASES OF THE BONES:

146. Sinusitis.....	3	3	3
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STATISTICAL ADDENDA

COMPILED BY THE RECORDER OF THE FACULTIES

TABLE 1.—Summaries of officers of instruction in the colleges at Berkeley, 1900-1920.

Year	Professors		Assoc. Profs.	Asst. Profs.	Lectrs.	Instrs.	Dept. Assts.*	Teaching Fellows	Total
	Acting Profs.	Emer. Profs.							
1900-1901	31	2	14	19	2	41	45	2	156
1901-02	29	1	13	22	5	56	43	0	169
1902-03	34	1	12	26	14	64	48	4	203
1903-04	36	2	14	42	14	51	60	3	222
1904-05	39	1	16	48	16	45	86	3	254
1905-06	37	3	18	51	14	55	82	3	263
1906-07	40	3	19	57	14	46	94	3	276
1907-08	44	3	22	59	12	47	104	4	295
1908-09	50	3	28	62	14	53	100	6	316
1909-10	55	8	23	70	14	52	118	7	347
1910-11	47	10	29	64	14	57	75	7	303
1911-12	48	9	42	57	18	81	110	9	374
1912-13	55	8	38	61	17	77	121	16	393
1913-14	72	6	33	82	16	87	114	14	424
1914-15	73	10	43	95	20	83	169	16	509
1915-16	68	10	50	78	20	83	168	26	503
1916-17	71	10	47	83	25	83	178	24	521
1917-18	84	8	53	88	28	85	224	24	594
1918-19	75	10	56	103	32	109	168	30	583
1919-20	111	10	53	88	31	96	98	38	525

*Including readers.

TABLE 2.—Officers of instruction in the colleges and departments away from Berkeley.

Year	L. O.	Art	Law	Medicine		P. G. Medicine	Dentistry	Pharm.	†Agri- culture
				S. F.	L. A.				
1900-1901	12	8	5	68	....	94	45	9	....
1901-02	11	8	5	81	....	101	50	11	....
1902-03	12	9	5	50	....	109	46	10	....
1903-04	13	10	6	62	....	28	24	9	....
1904-05	13	9	6	55	....	23	25	8	....
1905-06	9	9	6	66	....	....	22	8	....
1906-07	7	....	6	52	....	....	34	9	....
1907-08	7	11	6	54	....	....	34	8	....
1908-09	8	7	6	54	....	....	31	8	....
1909-10	7	7	6	58	59	....	26	8	....
1910-11	16	9	6	55	61	....	32	8	10
1911-12	16	10	6	55	61	....	31	7	14
1912-13	17	12	6	53	58	....	24	9	....
1913-14	12	8	8	70	58	....	25	9	12
1914-15	14	8	8	80	145	....	25	8	23
1915-16	12	8	6	98	not reported	....	29	10	24
1916-17	14	13	8	142	121	....	37	7	29
1917-18	14	12	8	159	42	....	39	9	39
1918-19	18	14	9	178	75	....	54	10	58
1919-20	16	11	9	184	169	....	47	7	35

NOTE.—Officers of instruction in the Hooper Foundation included in the S. F. Medical School.

†Beginning 1918-19 includes University and Farm School courses at Davis and at other outlying departments, including the Graduate School of Tropical Agriculture at Riverside. Before 1918-19, the University Farm only.

College or School	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
IN BERKELEY										
<i>Graduate Students:</i>	258	311	344	404	459	535	532	377	328	549
	243	267	304	303	373	477	560	530	477	548
<i>Undergraduates:</i>										
Letters.....	59	64	69	71	79	93				
in San Francisco.....	113	104	107	105	114	193				
	8	6	6	11	14	15	26	26	36	47
		295	308	329	324	369	419	338	346	491
IN LOS ANGELES:										
Los Angeles Medical Department.....	28	18	7	3	.....	27	46	39	45	53
	6	1	0	0	.....	1	2	3	0	0
Junior College Department.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	133
	.....	.....	.....	.....	.....	.....	.....	.....	.....	117
	.....	.....	.....	.....	.....	.....	.....	.....	.....	250
Total in the University (deducting for dupli.)	2631	2842	3128	3606	3764	3876	4190	3109	3947	6166
	1417	1579	1852	2074	2408	2722	2972	3239	3433	4602
				5680	6172	6598	7162	6348	7380	10768
SUMMER SESSIONS, 1910-1919										
	460	562	676	783	982	1488	1190	868	825	1177
	591	1419	1599	1580	2197	3876	3975	3111	4197	3157
										4334
Total.....	3091	3404	3804	4389	4746	5364	5380	3977	4772	7343
	2008	2998	3451	3654	4605	6598	5757	6350	7630	7759
										15102
Deduct for duplicate registrations in Summer Session and in Fall session following.										
	.....	.....	220	299	324	431	423	300	264	344
	245	293	183	218	289	355	391	450	503	804
			403	517	517	786	814	750	767	1148
GRAND TOTAL.....	4854	6109	3584	4090	4422	4933	4957	3677	4508	6999
			3268	3436	4316	6243	5366	9577	7127	6955
				7526	8738	11,176	10,323	11,635	13,954	

*Beginning 1915-16, the colleges of Letters, Social Sciences, and Natural Sciences were merged into a single college of Letters and Science.

†In the above table, 1910-11 to 1913-14 inclusive, students at large are summarized separately, and are also distributed among the several colleges.

‡Total, deducting ⁽⁴⁸⁾(41 89) for graduates who received their degrees as undergraduates, December, 1919.

‡Net Total (duplicates deducted) 1919-20, as follows: Juris. { 7 56; Juris. { 49 3 L.&S. { 29 Special { 2 4 L.&S. { 29 Grad. { 5 114
{ 7 36; Med. { 1 3; Med. { 9 38; Med. { 0 5; (Total 24 138).

¶Figures for Medical School include only third and fourth years, figures for first and second years being included in "Students in Berkeley," graduate and undergraduate.

College or School	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
IN BERKELEY										
Graduate Students	258 213	311 267	344 304	404 303	459 373	535 477	532 560	377 330	328 177	519 518
Undergraduates	59 113	172 164	168 107	176 105	176 111	193 193	1155 2232	1586 3687	1160 2364	1146 3759
Letters	365 786	1151 796	1138 911	1306 1035	1497 1296	1871 1296	1871 2232	1586 3687	1160 2364	1146 3759
Social Sciences	319 260	454 609	454 408	566 862	566 511	727 1077	746 593	746 1322	746 591	746 1337
Natural Sciences	258 5	263 263	282 5	282 287	298 14	311 296	310 311	340 30	363 27	388 113
Commerce	270 10	350 280	429 22	429 372	524 26	532 455	532 28	532 565	333 14	356 546
Agriculture	294 0	316 294	318 0	318 316	366 0	361 366	345 0	345 0	328 0	300 234
Mechanics	209 0	160 209	132 0	132 160	122 0	102 122	93 0	93 0	126 0	106 0
Mining										
Engineering Unclassified										
Civil Engineering	236 0	236 236	234 0	234 234	224 0	261 0	234 0	234 0	196 0	168 0
Chemistry	55 2	57 57	56 0	60 56	60 60	62 63	69 65	74 74	102 106	131 137
At Large	38 30	68 68	29 36	23 65	23 37	41 60	3 90	3 7	10 10	
Unclassified										
Medicine (1st and 2nd years)	27 3	30 30	27 1	28 28	52 7	39 39	42 7	49 49	31 5	36 36
Jurisprudence										
Total Undergraduates	2122 1179	2266 3301	2527 1336	2527 1567	2916 4094	3041 1787	3041 4703	3001 2054	3356 5095	3356 5286
Total in the Colleges at Berkeley (deducting for duplicates)	2343 1403	2539 3746	2821 1573	2821 1846	3285 4667	3454 2064	3454 5349	3491 2394	3751 5848	3751 6197
Percentage of men, depts. at Berkeley	62.55	61.74	60.44	61.41	59.06	56.28	56.02	45.98	51.38	55.50
AT MT. HAMMONT LICK OBSERVATORY	1 1	2 105	2 2	0 119	0 0	0 100	2 88	2 71	2 2	2 76
AT LA JOLLA SURFERS INSTITUTE FOR BIOLOGICAL RESEARCH										
IN RIVERSIDE GRADUATE SCHOOL OF TROPICAL AGRICULTURE										
IN SAN FRANCISCO										
Hastings College of the Law	104 1	117 105	117 2	100 119	88 0	71 100	73 88	76 2	91 76	91 0
Medical School (3rd and 4th years)	18 0	16 18	16 2	17 18	24 3	37 20	43 31	49 9	43 58	43 10
College of Dentistry	64 0	77 64	77 1	90 78	93 0	109 90	138 93	138 109	138 139	138 139
California College of Pharmacy	78 7	79 85	79 1	95 80	113 3	113 98	113 117	91 4	91 95	89 96
Total in the Colleges in San Francisco	264 8	289 272	302 6	302 295	318 308	310 11	310 329	334 14	393 324	393 324
IN LOS ANGELES										
Los Angeles Medical Department	28 6	18 34	18 1	7 19	3 0	3 7	3 3	27 1	46 28	46 2
Junior College Department										
Total in the University (deducting for duplicate registrations in Summer Session and in Fall session following)	2631 1117	2842 4048	3128 1579	3128 4121	3606 1852	3764 2074	3764 5680	3876 2408	4190 6172	4190 7272
SUMMER SESSIONS, 1910-1919	480 591	562 1051	676 1419	676 1981	783 2275	982 2197	1488 3179	1488 3876	1190 5361	1190 2785
Total	3091 2008	3404 5099	3804 2998	3804 6102	4389 7255	4746 8013	5364 9351	5364 11962	5364 11962	5364 11962
Deduct for duplicate registrations in Summer Session and in Fall session following		245	220	220	220	220	220	220	220	220
GRAND TOTAL	4854	6109	3584	6852	8136	7526	13116	8738	11176	11176

*Beginning 1915-16, the colleges of Letters, Social Sciences, and Natural Sciences were merged into a single college of Letters and Science.

(In the above table, 1910-11 to 1913-14 inclusive, students at large are summarized separately, and are also distributed among the several colleges.)

Total, deducting (11.89) for graduates who received their degrees as undergraduates, December, 1919.

(Net Total (duplicates deducted) 1919-20, as follows: Juris. 41.88 (29), Special 2 (2), Grad 5 (5), Total 24 (138).)

*Figures for Medical School include only third and fourth years, figures for first and second years being included in "Students in Berkeley," graduate and undergraduate.

TABLE 4.—Attendance in departments not enumerated in foregoing tables 1916–1920.

NOTE.—Instruction in the departments herein referred to does not, generally speaking, lead to University degrees.

	1916-17	1917-18	1918-19	1919-20
University Farm School, Davis.....	314	218	163	727
California School of Fine Arts, San Francisco.....	356	507	460	727
*Lick-Wilmerding Schools (boys).....	483	449	473	502
Lick-Lux Schools (girls).....	.....	.....	227	214
Teachers' Curricula, Southern Branch.....	.....	.....	.....	1,125
University Extension				
††Lectures.....	79,760	102,500	85,273	107,539
†Correspondence courses.....	5,745	2,456	2,835	3,042
†Bureau of Class Instruction.....	3,329	8,004	7,988	10,750
†Bureau of Visual Instruction.....	.....	95,000	112,208	.....
University Extension in Agriculture				
†Correspondence.....	29,622	34,416	1,760	5,625
†‡Farmers Meetings.....	103,792	205,662	206,475	323,266
†Home Demonstrations.....	12,708	75,771	37,816	38,868
Short Courses in Agriculture.....	250	250	303	495
Other Lectures.....	35,708	3,565	16,575	18,884

*Before 1917-18 Wilmerding School of Industrial Arts.

†The figures here given represents total attendance during the year, not the number of individuals receiving instruction.

†‡In addition to these figures the Southern Division of the Extension Division gave 150 lectures in 1917-18, and 207 lectures in 1918-19 with an attendance ranging from 75 to 1,100. Enrollment 1919-20 was 5463.

‡Beginning December 1, 1916, annual attendance records for Farmers Meetings are for the twelve-months period, December 1-November 30.

TABLE 5.—Showing proportion (per cent) of the undergraduates, including special students, in each of the colleges at Berkeley.

	1906-07	1907-08	1908-09	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Letters.....	5.70	5.05	5.07	5.11	5.21	4.66	4.30	3.74	3.80	†				
Social Sciences.....	41.87	42.14	39.01	37.52	34.86	31.60	31.90	31.83	36.72	67.82	68.57	72.15	67.83	66.30
Natural Sciences.....	8.82	8.42	10.41	13.54	18.45	23.93	26.31	28.11	26.24					
Commerce.....	6.14	6.78	7.03	7.50	7.96	7.44	7.01	6.30	6.11	6.25	6.77	6.42	8.37	9.65
Agriculture.....	5.07	5.05	5.63	6.67	8.48	10.33	11.11	11.74	10.85	10.39	9.47	6.88	6.12	6.87
Mechanics.....	10.53	9.96	10.85	10.19	8.96	8.82	7.77	7.78	7.09	6.35	5.69	4.50	4.82	7.36
Mining.....	10.93	10.65	9.67	8.22	6.33	4.44	3.22	2.59	2.00	1.71	2.18	2.04	1.72	2.60
Engineering Unclassified.....													4.16	.....
Civil Engineering.....	8.74	9.58	9.11	7.11	7.14	6.49	5.47	5.55	4.59	3.60	2.91	2.25	2.43	2.44
Chemistry.....	1.67	1.49	1.85	1.55	1.72	1.55	1.46	1.38	1.45	1.95	2.37	2.78	2.97	2.81
Medicine.....	.30	.26	.55	.50	.09	.08	1.44	.98	.96	.66	.69	1.30	1.00	.81
†Unclassified.....													.91	.....
At Large.....		.53	1.33	1.18	*[2.06]	*[1.80]	*[1.46]	*[1.91]	.19	.....	.....	.....	.....	.....
Jurisprudence.....										1.27	1.35	.94	.40	1.16

*In the above table, 1910-11 to 1913-14 inclusive, students at large are summarized separately, and are also distributed among the several colleges according to expressed collegiate preference.

†Beginning 1915-16, the colleges of Letters, Social Sciences, and Natural Sciences were merged into a single college of Letters and Science.

‡S. A. T. C. and N. U. men who did not specify any college.

TABLE 6A.—Summaries of resident students registered to November 1 (approximately), 1911-1920.

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
*A. ACADEMIC COLLEGES:										
<i>a. Berkeley</i>										
Graduates.....	444	509	535	633	755	863	663	512	709	793
Undergraduates.....	3273	3695	4279	4574	4801	5110	4560	5117	7886	8713
Totals.....	3717	4204	4814	5207	5556	5973	5223	5629	8595	9506
<i>b. Los Angeles</i>										
Totals.....	3717	4204	4814	5207	5556	5973	5223	5629	8595	9506
*B. PROFESSIONAL SCHOOLS AND COLLEGES.....										
Deducting for Duplicates.....	85	114	115	127	161	173	91	41	157	220
Grand Totals.....	4074	4585	5220	5614	6013	6522	5707	6155	9528	11197
Students in Berkeley Departments.....	3768	4286	4902	5290	5614	6042	5326	5747	8780	9669
Students in San Francisco Departments.....	287	292	314	324	363	425	334	340	498	656
Students in the Los Angeles Departments†.....	.....	.....	.....	.....	.....	.....	.....	.....	250	872
										11197

*In the figures for the years 1911-18, the registration in the School of Jurisprudence is included in A (Academic Colleges) and also in B (Professional Schools); for the years 1919 and 1920 this registration is included only in B (Professional Schools).

†Not including students in Teachers' Curricula, 1108.

TABLE 6B.—Graduate students, academic departments, classified by colleges, November 1, 1920, with comparable figures for 1917, 1918, and 1919. (Graduate students in the Schools of Jurisprudence, Medicine, and Architecture not included.)

NOTE.—In the columns showing the number of students, the upper left-hand figures refer to men, the lower to women; the figures on the right are totals.

	1917		1918		1919		1920	
	179		123		218		261	
Letters and Science.....	391	570	341	464	391	609	426	687
	4		1		9		6	
Commerce.....	2	6	1	2	2	11	6	12
	18		5		27		26	
Agriculture.....	0	18	1	6	2	29	2	28
	3		4		15		13	
Mechanics.....	0	3	0	4	1	16	0	13
	3		2		9		6	
Mining.....	0	3	0	2	0	9	0	6
	2		2		6		9	
Civil Engineering.....	0	2	0	2	0	6	0	9
	17		7		28		36	
Chemistry.....	1	18	3	10	1	29	2	38
	226		144		312		357	
Totals.....	394	620	346	490	397	709	436	793

TABLE 6C.—Undergraduate students, academic departments, Berkeley, classified by colleges and classes, November 1 (approximately), 1919 and 1920.

NOTE.—In the columns showing number of students the upper left-hand figures refer to men, the lower to women; the figures on the right are totals.

Colleges	Senior or 4th year		Junior or 3rd year		Sophomore or 2nd year		Freshman or 1st year		Special		Totals	
	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920	1919	1920
Letters & Science	341 555	487 678	369 648	482 782	530 769	601 984	676 1174	503 1154	82 109	65 100	1998 3255	2138 3698
Commerce.....	50 16	87 20	103 34	160 40	166 51	256 71	230 95	295 90	33 7	49 3	582 203	847 224
Agriculture.....	76 6	115 9	121 12	130 12	124 15	122 5	179 16	129 6	20 0	19 2	520 49	515 34
Mechanics.....	55 0	67 1	99 0	119 0	163 0	164 0	232 0	211 3	26 0	23 0	575 0	584 4
Mining.....	26 0	32 0	46 0	49 0	56 0	67 0	82 0	61 0	11 0	13 0	221 0	222 0
Civil Engineering.	30 0	26 0	25 0	41 0	67 0	57 0	97 0	74 0	9 0	3 0	228 0	201 0
Chemistry.....	21 2	22 0	46 3	54 1	67 3	70 6	91 11	78 6	11 0	9 0	236 19	233 13
Totals.....	599 579	836 708	809 697	1035 835	1173 838	1337 1066	1587 1296	1351 1259	192 116	181 105	4360 7886	4740 3973

TABLE 6D.—Students in professional colleges and schools, November 1 (approximately), 1911–1920.
(Berkeley and elsewhere).

College or School	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
School of Architecture..... (Berkeley)	.....	.....	.....	.....	8 0	5 2	2 0	2 0	0 0	2 0
School of Jurisprudence..... (Berkeley)	82 3	110 4	108 7	119 8	149 12	157 16	74 17	18 23	198 31	244 36
Medical School..... (San Francisco and Berkeley)	59 10	84 17	100 20	106 22	99 17	115 14	127 18	177 19	177 30	182 31
Hastings College of the Law..... (San Francisco)	115 1	96 1	79 0	70 2	70 1	87 6	32 4	37 4	48 4	77 10
College of Dentistry..... (San Francisco)	75 0	89 0	90 0	112 0	140 1	173 4	166 7	171 10	226 19	316 20
California College of Pharmacy..... (San Francisco)	77 1	85 2	111 3	91 4	88 5	92 3	81 5	52 9	87 20	94 23
Los Angeles Medical Department..... (Los Angeles)	18 1	7 0	3 0	.....	27 1	46 2	39 3	45 0	.....	42 4
Totals.....	426 16	471 24	491 30	498 36	581 37	675 47	521 54	502 65	736 104	957 124

TABLE 7.—Enrollment of graduate students, 1909-1920.

	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Total number of graduate students (duplicates deducted).....	425	501	578	648	707	832	1014	1092	907	805	1097
Number from University of California.....	214	258	307	342	371	424	431	563	487	472	658
Percentage of graduate students from University of California.....	50.3	51.4	53.1	52.8	52.3	51.0	53.7	55.5	53.03	58.63	60.00
Percentage of graduate students from other institutions.....	49.6	48.5	46.9	47.2	47.7	49.0	46.3	44.5	46.97	41.37	40.00
Total number of colleges and universities represented.....	98	120	122	152	146	168	207	175	193	135	146
*Number of graduate students taking higher degrees (masters' and doctors' degrees, not including juris doctor).....	66	79	99	103	149	149	172	168	133	114	165
*Percentage of graduate students taking higher degrees (masters' and doctors' degrees, not including juris doctor).....	15.5	15.7	17.1	15.9	21.1	17.9	16.9	15.4	14.66	14.16	15.04
Number of graduate students receiving Ph.D..	5	6	15	10	14	22	22	33	17	21	23
Number of graduate students receiving the bachelor's degree.....	8	7	7	10	7	3	6	3	2	0	0
Number of graduate students taking juris doctor in the academic departments.....	6	8	13	11	16	20	22	30	5	10	28

*Beginning 1914-15, includes Degrees of Graduate in Architecture, Graduate in Education, Graduate in Public Health, and Electrical Engineer.

TABLE 8.—Degrees conferred, 1912–1920.

DEGREE	1912	1913	1914	1915	1916	1917	1918	1919	1920†
LL.D.	5 0 5	5 0 5	4 0 4	4 0 4	2 0 2	2 0 2	14 0 14	6 1 7	0 0 0
J.D.	10 1 11	11 1 12	15 1 16	18 2 20	22 0 22	27 2 29	3 2 5	9 4 13	23 3 26
Ph.D.	13 2 15	9 2 11	11 2 13	22 4 26	22 0 22	32 3 35	12 3 15	20 4 24	21 5 26
M.A.	4 20 24	6 16 22	12 26 38	43 46 89	48 65 113	49 74 123	28 53 81	25 67 92	53 67 120
M.L.	9 15 24	6 14 20	13 28 41	---	---	---	---	---	---
M.S.	26 9 35	43 13 56	41 18 59	20 5 25	31 3 34	13 2 15	8 3 11	5 1 6	22 0 22
Grad. in Arch.	---	---	2 0 2	3 0 3	1 0 1	1 0 1	0 0 0	0 0 0	0 0 0
Grad. in Publ. H.	---	---	0 0 0	4 1 5	0 0 0	1 0 1	0 1 1	0 0 0	0 0 0
Gr. in Educ.	---	---	---	---	---	1 0 1	1 0 1	1 0 1	0 0 0
E. E.	---	---	---	---	---	1 0 1	0 0 0	0 0 0	0 0 0
Met. E.	---	---	---	---	---	---	1 0 0	0 0 0	0 0 0
Min. E.	---	---	---	---	---	---	0 1 1	0 0 0	0 1 1
Number of higher degrees	67 47 114	80 46 126	98 75 173	114 58 172	126 68 194	127 81 208	68 62 130	66 77 143	120 75 195
A.B.	11 25 36	23 24 47	11 24 35	201 310 511	257 331 588	226 357 583	151 453 604	251 422 673	369 509 878
B.L.	42 114 156	54 122 176	111 171 282	---	---	---	---	---	---
{ Nat. Sci.	70 61 131	80 65 145	56 64 120	5 11 16	---	---	---	---	---
{ Commerce	21 0 21	32 0 32	27 0 27	37 3 40	39 1 40	46 2 48	13 2 15	23 7 30	37 14 51
{ Agricult're	40 0 40	45 3 48	67 4 71	74 5 79	78 2 80	102 0 102	40 3 43	43 3 46	74 6 80
B.S. { Mechanics	36 0 36	30 0 30	47 0 47	41 0 41	38 0 38	39 0 39	12 0 12	15 0 15	42 0 42
{ Mining	26 0 26	25 0 25	25 0 25	15 0 15	13 0 13	14 0 14	5 0 5	8 0 8	15 0 15
{ Civil Eng.	31 0 31	31 0 31	30 0 30	33 0 33	32 0 32	38 0 38	14 0 14	5 0 5	17 0 17
{ Chemistry	7 0 7	11 0 11	7 0 7	13 1 14	4 1 5	13 0 13	10 0 10	8 1 9	6 1 7
{ Nursing	---	---	---	---	---	---	---	---	0 5 5
Number of bachelor's degrees {	284 200 484	331 214 545	381 263 644	419 330 749	461 335 796	478 359 837	245 458 703	353 433 786	560 535 1095
LL.B.	28 1 29	22 0 22	30 0 30	18 0 18	8 0 8	16 0 16	6 0 6	11 1 12	12 1 13
*M.D.	10 1 11	11 1 12	11 3 14	12 1 13	25 4 29	22 4 26	---	17 4 21	15 6 21
D.D.S.	15 0 15	20 0 20	23 0 23	19 0 19	29 0 29	38 1 39	32 0 32	60 3 63	15 0 15
†Ph.G.	31 0 31	28 2 30	41 2 43	36 1 37	27 2 29	31 1 32	22 3 25	23 0 23	30 9 39
Pharm.B.	2 0 2	0 0 0	1 0 1	1 0 1	2 0 2	0 0 0	0 0 0	3 0 3	0 0 0
Ph. C.	---	---	---	---	---	2 0 2	3 1 4	1 0 1	1 1 2
Number profes- sional degrees {	86 2 88	81 3 84	106 5 111	86 2 88	91 6 97	109 6 115	63 4 67	115 8 123	73 17 90

† Ph.G. discontinued and replaced by Ph.C. between 1905 and 1911 inclusive. Beginning 1915, Ph.C. was given for completion of four-year course.

* M.D. not conferred, Commencement, 1918, on account of the transition from the four-year to the five-year curriculum.

‡ Figures for 1920, as for the other years represented in this table, include degrees conferred in December.

TABLE 9.—Number of accredited schools each year since 1890.

	1890-91	1891-92	1892-93	1893-94	1894-95	1895-96	1896-97	1897-98	1898-99	1899-1900
Number public high schools accredited.....	17	24	30	39	43	52	61	66	76	87
Number private secondary schools accredited	6	7	10	9	14	15	15	16	15	23
Total number schools accredited.....	23	31	40	48	57	67	76	82	91	110
	1900-01	1901-02	1902-03	1903-04	1904-05	1905-06	1906-07	1907-08	1908-09	1909-10
Number public high schools accredited.....	93	93	100	104	99	106	114	122	140	147
Number private secondary schools accredited	23	21	18	20	21	23	23	25	30	31
Total number schools accredited.....	116	115	118	124	120	129	137	147	170	178
	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20
Number public high schools accredited.....	155	172	181	192	189	191	248	256	259	270
Number private secondary schools accredited	31	31	32	34	36	36	53	60	58	62
Total number schools accredited.....	186	203	213	226	225	227	301	316	317	332

NOTE.—Schools authorized to recommend though not regularly accredited: 1909-10, 34; 1910-11, 26; 1911-12, 35; 1912-13, 40; 1913-14, 45; 1914-15, 53; 1915-16, 49.

The summary for 1919-20 includes 82 public and 30 private schools in Division B of the accredited list; the continued accrediting of schools in Division B is rendered uncertain by undeveloped organization, inadequate resources, or other causes.

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The President's Annual Report.

The Prospectus of the College of Agriculture.

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ANNUAL REPORT

OF THE

PRESIDENT OF THE UNIVERSITY

1920-1921

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UNIVERSITY OF CALIFORNIA

Annual Report of the President of the
University on behalf of the Regents
to his Excellency the Governor of
the State of California

1920-1921

UNIVERSITY OF CALIFORNIA PRESS
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REPORT OF THE PRESIDENT OF THE UNIVERSITY

UNIVERSITY OF CALIFORNIA,
BERKELEY, December 27, 1921.

*To His Excellency William Dennison Stephens,
Governor of the State of California.*

SIR: I submit to you herewith the Annual Report of the President of the University of California. Full and detailed accounts exhibiting the situation of the various colleges and departments of the University from a statistical standpoint, and prepared by the responsible University officers, accompany this report, and I confine myself here to certain remarks of a general character.

Immediately previous to the session of the last Legislature the University was faced with a very serious condition, owing primarily to the fact that it had outgrown the basis of support provided for it in 1910 and that responsibility added by war and post-war conditions could not be properly met. It was a period of genuine anxiety to Regents and President, and for perhaps the first time in its history the University was faced with the alternative of disastrously limiting its services or incurring a deficit. Happily, this difficult situation has been relieved by the generous appropriations of the forty-fourth session of the Legislature.

The University now has a new standard of support, which, as more fully discussed later on in this report, should make unnecessary further sensational demands upon the State. This generous provision has enabled us to adopt a scale of academic compensation which compares favorably with the standards of other American institutions of comparable degree and which will spare the University a disintegration of its teaching staffs which three years ago it seemed might occur.

American university teachers were afforded an unprecedented opportunity to exhibit their versatility and capacity during the months of the War, when the nation had such desperate need of trained and informed men. The adaptability of university teachers to all sorts of situations, administrative as well as technical, their success, and the appreciation which their services evoked, have had a stimulating and interesting effect upon universities. The academic profession has gained in self-respect, in sense of independence, in consciousness of its own worth. This result has created difficulties for the universities themselves, as it has led to considerable numbers of teachers being drawn away into public and business careers. It may be said at once and positively that universities cannot compete with the financial rewards of private business. University salaries must be based upon a lower and entirely distinct scale from the compensation paid by American business for comparable talent and administrative capacity. The attractions of a university career to men of intelligence and personality must remain other than financial. The university professor, like the man who enters the public service, or the Army or Navy, must, unless he has independent means, be reconciled to the prospect of remaining a relatively poor man. The attractions of university life lie in its freedom, its opportunity for the exercise of the highest spiritual activities, its social distinction, and finally, in the surety of tenure, the prospects for continuous though moderate advancement, and the assurance of a retiring provision when the university's interests recommend a teacher's withdrawal from active service. If university-trained men were actuated primarily by economic motives the prospects of recruiting university faculties would be hopeless, but economic motives are not the most influential with the class of men fitted by talent and training for university careers. It appears that for a considerable period in America, nevertheless, there will be a shortage of university teachers. The increase of demand through the recent rapid growth of university attendance has coincided with the raising of standards and an actual diminution of supply. The most important immediate task

which universities have is to draw into the life of scholarship and university service an increased number of brilliant and responsible young men. To effect this, the career and its compensation must be clearly understood by senior college classes, and must have sufficient appeal to capture the most gifted, independent, and ambitious minds of each college generation.

American universities are undoubtedly making strenuous efforts to increase the support for the academic profession and to add to its appeal. The enhanced cost of living combined with other alterations of the War to make the old standards of compensation obsolete and inequitable. I have the impression, however, that in some instances American universities have proceeded too rapidly and even heedlessly in lifting the scale of salaries and particularly in conferring undue rank upon immature men whose scholarship has not been fully demonstrated. The University of California has at least not made this mistake. We have rather fallen appreciably behind other American universities of like importance and reputation; and in spite of the fact that much was done in the budgets for 1919-20 and 1920-21 to better salaries, a certain retardation of improvement has been inevitable. Even to accomplish what was done a large deficit was incurred by the University in the fiscal year 1920-21. In the present year, 1921-22, owing to uncertainty as to the University's income, practically no advance was made in increasing academic salaries. The generous provision for the University made by the last legislature now makes it possible for the University of California to attain an improved and definite scale of academic compensation based upon a plan authorized by the Regents in March, 1920. It is to the interest of the University that this plan be announced and receive the careful examination of alumni and friends of the institution. My own belief is that our plan is adequate and may stand indefinitely unless social conditions in America appreciably alter. In presenting this plan I repeat again that what the true university teacher covets is not a highly remunerative personal compensation, but a salary that will give reasonable comfort to himself and his family, spare

him the anguish and humiliation of debt, provide for the proper education of his children and for his own advanced years, and allow him freedom and opportunity to develop the field of teaching and research which most fully represents his capacity and enthralls his imagination. After the first necessities of life his interest is in having adequate resources for carrying through those disinterested and serviceable discoveries of which universities are the home.

The average American collegian whose education has been uninterrupted and who has been trained under fortunate conditions, now receives his bachelor's degree at about the age of twenty-two. If he enters at once and vigorously upon his post-graduate preparation, three years of concentration, embracing usually some movement from one university to another, will bring the student to the completion of his preparation as a teacher and to the traditional recognition of this attainment in the degree of doctor of philosophy. He is now twenty-five and is ready for university appointment at the beginning scale of the academic classification, which generally bears the title of "instructor." Social considerations recommend that he marry and commence the acquisition of a home. The next fifteen or twenty years, as in all professions, must be years of extremely hard work, of due sacrifice both by himself and his wife, before the rewards of an assured and distinguished place in his profession and of a home and family are secure. The young instructor must be prepared to make these sacrifices, but he should have the assurance that his income will augment steadily with the increase in size of his family and the needs of his own growth. The University of California has adopted a four-year probational period for the teacher of this category. We appoint him at \$1800. We assure him of a \$200 advance each year for four years. At the end of four years he is presumably between twenty-nine and thirty years of age and is receiving a salary of \$2400. This salary has permitted no relaxation of effort, no degree of luxury in his life, and little or no opportunity for travel; but it has permitted him to marry, to provide for the

birth of one or more children, to add every few weeks a new book to his library, to subscribe to learned publications, and to keep out of debt. If he has made the expected progress he is ready for promotion to the grade of "assistant professor" with a salary of \$2700. This after a couple of years may be followed by another promotion to \$3000.

The grade of "associate professor" follows at about the age of thirty-five or thirty-six, and as now arranged in this institution has three scales of compensation—\$3300, \$3600, and \$3900. Experience seems to indicate that an aspiring and progressive young man should have the satisfaction of receiving the merited recognition of a university as often as every two years. This plan provides a possible increase in salary of \$300 at each such period. At the age of thirty-nine or forty he may be ready to be considered for appointment to the highest academic distinction which a university can bestow, the grade of "professor." In the University of California this rank is given only after a most careful weighing of a man's achievements by his mature colleagues. The rank of professor is accorded for clear demonstration of the possession of a strong and cultivated personality, success as a teacher, and actual achievement in some field of scholarship. We will say that such a man is now forty and receives the lowest compensation of a professorship, \$4000. There is a considerable latitude in the authorized salaries of professors, \$4000 to \$8000 a year. The higher salaries are conditioned by several factors—a man's eminence as a scholar and teacher, his vitality as maturity passes into advanced years, his serviceability as a citizen of the academic community, and his gifts in training disciples and enlarging the field of knowledge. The proposed salary figures above \$4000 are \$4500, \$5000, \$5500, \$6000, \$6500, \$7000, \$7500, \$8000. The highest grades are reserved for men of especial eminence and value, and will supposedly be held by a very small number of men. The years from forty to fifty, however, should be years of a man's best academic productivity; the rewards of life are now flowing in; the years of obscure work and hard endeavor are receiving their recog-

nition. The University of California plan would permit the typical professor between the ages of forty and fifty to receive at least four times an augmentation of salary of \$500 and at the latter age arrive at a salary of \$6000. He has fifteen years further service between the ages of fifty and sixty-five before retirement comes. If from the age of fifty onward it appears clear that the best work of the man has been done, and that with a lowering vitality there is a loss of interest and a diminution of productivity, then it may well be that this salary of \$6000 should remain his permanent compensation, but the man of unusual mind and strength should continue to advance his reputation and enhance the value of his service during this period. If such progress continues, the recognition of the University should follow; if it does not, and the professor remains at \$6000 until the age of sixty-five, he then leaves the active teaching service at a retiring salary of \$4000. The research opportunities of the University are still open to him, and the conditions of retirement permit the University to take advantage in administration and in counsel of his mature experience.

What has been sketched here should be further conditioned by two additional statements: the salaries here given are exclusively "professorial"; they do not embrace the "honoraria" or emoluments paid to a man of administrative gifts who fills such positions as those of "director" or "dean." It is the policy of the University of California to pay an additional sum for this service, which represents a surrender of a considerable part, or the whole, of a teacher's freedom for devotion to the administrative service of the institution. The usual honorarium of a dean or director is \$1000, and from this figure advances to a compensation of \$3000 paid to the burdensome office of Dean of the Faculties. All administrative positions within the University are of indefinite tenure. The University has no engagement to continue a man in an administrative position longer than the interests of the institution are best served by his holding the position. It should be regarded as a natural and usual thing for a professor after some years of experience in an administrative

position to relinquish this care with its added emolument and return to the freer status of a professorship.

The second factor is this: while the normal advancement of a university professor is much as is sketched above and may be tabulated as set out below, the University is eager to advance a man more rapidly if his abilities so recommend. The University at present has a considerable group of men under forty who are distinguished by early brilliancy of achievement and who have gained the professorial grade and its higher emoluments before reaching the normal age of forty. The appearance of such men is to be welcomed and promptly recognized. In introducing a normal rate of advancement a University cannot afford to establish a fixed routine of promotion or to fail to reward youthful results that are brilliant and precious to mankind. Subject to these conditions, which must be constantly borne in mind, the following normal plan of advancement is presented:

Age	Grade	Salary
25-26	Instructor	\$1,800
26-27	Instructor	2,000
28-29	Instructor	2,200
29-30	Instructor	2,400
30-31	Assistant Professor	2,700
32-33	Assistant Professor	3,000
35-36	Associate Professor	3,300
37-38	Associate Professor	3,600
39-40	Associate Professor	3,900
40-42	Professor	4,000
42-44	Professor	4,500
44-46	Professor	5,000
46-48	Professor	5,500
48-50	Professor	6,000
	Higher recognition for exceptional services and great distinction	6,500
		7,000
		7,500
		8,000
65-66	Usual age for retirement from active teaching.	

The task of the American university and particularly the American state university, is large and varied. It must, in the first place, teach; and in large part the object of its teaching is rather to form character and fit for social leadership than to advance scholarship. The vast proportion of students attending the University of California are here to gain preparation for various life employments; they are a select group of youth recommended to us in large part by secondary school principals. They represent an elimination of about five-sixths of the high school student body. With few exceptions they are young men and women of unusual intelligence and character. They are probably not as well prepared for university work as was the case when the high school curricula were more definitely planned for college entrance. They frequently come with deficiencies in secondary studies that have to be removed by instruction at the University. Life at the University of California is highly competitive. A student is not surrounded with administrative watchfulness, but on the whole stands upon his or her resources. There are few or no rules governing student conduct other than that a student's behavior shall be for the "good of the University." Students are presumed to be sufficiently mature and sufficiently experienced so that they will not be heedless of proprieties of conduct. If they are found to be otherwise the University has no remedy except to ask them to retire. Intellectually, the life is a struggle, especially in the first one or two years, where the method of instruction is frequently different from what the student has been accustomed to. A considerable number of students fails each term to achieve the University requirement of ten units of work of satisfactory grade. The student body suffers a usual annual loss of about fifteen per cent, or from 1200 to 1500 students through disqualification. Sometimes this failure is clearly due to lack of qualifications or to unpardonable heedlessness, but sometimes it appears due to causes not wholly under the student's control, or to deficiencies of which he himself is not fully aware. Under these latter circumstances it is pleasing to note that students usually take

advantage of the opportunity which the University keeps open for them of returning after a disqualification of a term. Sometimes admission is contingent upon securing satisfactory preparation during disqualification in a subject in which the student was obviously unprepared.

Over and above this great and interesting responsibility for developing the powers of the young men and women who are to be the leaders of our society is the task of advancing knowledge and training scholars. This is the particularly congenial task of a university. It must replenish the company of scholars or our knowledge instead of advancing will diminish and fail. And it must in common with other centers of discovery push back the curtain of darkness which surrounds human life, and rediscover old truth and restate for each generation the principles of our moral and social life. It is this great task which gives to universities their large influence in the life of the world.

The activities of a university teacher must be conceived in relation to this varied function of a university. A typical professor of the University of California may divide his teaching between three different kinds: he may instruct a large freshman or sophomore class of many hundreds, where his influence will make itself felt less by personal contact than by what he is able to say from the lecture platform. The work of quizzing and personally assisting so large a class of students in this case is performed by a staff of assistants or teaching fellows who meet students weekly in sections of about twenty-five. In the second place, a professor will usually give an upper division course to a smaller group of junior or senior students. These classes run all the way from twenty-five to two hundred, or even more. Nevertheless, even when they are largest, there is an opportunity for a professor to become personally acquainted with at least a considerable number of each class and to assist in their preparation. Finally, a professor usually gives a graduate course, or seminar, to a small group of post-graduate students who have set themselves to the serious task of becoming scholars in his field of knowledge. Under our plan of instruction the usual procedure

is for the professor to admit these students into intimate collaboration with himself in the study of some one of the several topics which occupy his thought and interest and upon which he is striving to make human understanding clearer.

Such a task as this demands about eight hours of fixed lecture or seminary engagements a week. To speak five or six times a week from a platform on materials that constantly have to be broadened and freshened is a considerable tax upon a man's capacity and vitality. Research study consumes the entire balance of the time which a man should devote to work. Thus about eight hours of teaching is a normal "load." Experience seems to indicate that for a man to attempt to teach more is to endanger the adequacy of his preparation and to interfere with his own studies which must be prosecuted assiduously if he is to remain a successful teacher. Not all professors, however, can accommodate their work to a typical plan. Some are mainly absorbed in researches, and their great service lies in stimulating the research activities of a small company of students who work intimately with them. On the other hand, in some departments of instruction where the work is more formal as it is in elementary language and mathematical studies, a professor may teach as much as twelve or fourteen hours.

In January, 1920, the President stated to the Regents that an annual appropriation by the State of four and one-half million dollars would thereafter be necessary for the proper support of the University in its several branches. On the basis of this calculation the Regents sought, first from the people and subsequently from the Legislature of 1921, a biennial appropriation of nine million dollars for the general maintenance of the University. The experience of the last twenty months has shown this calculation to be correct. The sum of nine million dollars (apart from past deficits and aside from the cost of permanent improvements) is the sum which ought to be expended by the Regents this biennium for the conduct of the University, over and above receipts from endowment funds and from the Federal Government. The University is being conducted this fiscal year,

1921-22, and plans for the budget 1922-23 are projected, on the assumption that nine million dollars, as above stated, will be available. This nine million dollars may be derived from the following sources: From State appropriations by the 44th Session of the Legislature, other than for capital improvements (\$1,176,955) and other than provision for the University's deficit of 1919-21 (\$650,000), \$8,312,499. There is added to this total the continuing appropriation for teachers' salaries made by the 43rd Legislature amounting to \$149,000. This makes a total of State appropriations for University maintenance of \$8,461,499. These figures are distributed among the following institutions: College of Agriculture, \$2,500,000; Southern Branch, \$1,000,000; Scripps Institution, \$45,000; University Extension, \$170,000; Medical School and free beds at the University Hospital, \$300,000; all other branches of the University, \$4,446,499. The total of these figures, \$8,461,499, exhibits a deficit of \$538,500 from the nine million dollars required. This deficit the Regents have met by charging upon all students an incidental fee of \$25 a half-year including the old fees for infirmary and gymnasium and the new fee for libraries, and also a tuition fee on non-resident students based upon the Carr Act and varying for the half-year from \$75 in other departments to \$250 in Medicine. The receipts for the present term from these student fees indicate that the contemplated deficit will be covered if the fees are maintained for the two years of the biennium. Inasmuch as some misapprehension has prevailed with regard to the students' attitude toward the incidental fee, I am able to assure the Governor that the students have met this charge with uniform cheerfulness and good will. Not a single protest has ever been brought to the President by a student.

The budget for the current fiscal year, 1921-22, was framed so as to come within a sum less than one-half of the State appropriations by enough to leave available for 1922-23 a 7 per cent increase. This principle was followed in all departments of the University except Southern Branch, Teacher Training. Aside from certain economies that may result in the budget for the

present fiscal year, the Comptroller calculates the following sums to be available for the budget of 1922-23:

College of Agriculture (exclusive of Federal appropriation)	\$1,292,272.00
Southern Branch, Teacher Training	500,000.00
University Extension	87,875.00
Scripps Institution	22,500.00
All other departments of the University, including the Colleges of Commerce, Chemistry, Dentistry, Civil Engineering, Mechanical Engineering, Mining Engineering, Letters and Science; the Schools of Architecture, Education, Jurisprudence, Medicine, The Hooper Foundation, Lick Observatory, Museum of Vertebrate Zoology, Junior College of Letters and Science at the Southern Branch, University Libraries, Administration (salaries and maintenance), Los Angeles Medical School (State appropriations only)	4,442,826.54

The increases here represented over the sums that will be spent in the present fiscal year it is proposed to devote to the following ends:

- (1) In the College of Agriculture, to inaugurate freshman instruction at Davis; to increase the staff of the college, add to its equipment, and expand its experimental researches. The additional sum available is estimated to be \$82,852.
- (2) In the Southern Branch, to develop the third year and add the fourth year in courses in the Teachers' College.
- (3) In University Extension, a very considerable expansion of the work, particularly among workingmen and in the San Joaquin and Sacramento Valleys.
- (4) In the Scripps Institution, no material change.
- (5) In all other branches of the University, an increased expansion of expense to realize the scale of academic compensation approved by the Regents in March, 1920, including certain merited promotions, and professorial additions to several departments.

During the past two years the increase of expense for teaching, of necessity, took the form, first, of added subordinate personnel: teaching fellows, assistants, associates, and instructors, furnishing staff sufficient to handle the very large classes in which

lower division instruction is organized; and, second, increased funds for equipment, current expenditure, and technical assistants in various departments. These two needs were met through increased appropriations for the fiscal years 1919-20 and 1920-21; but the interesting and important effort remains of bringing into the University's service gifted young men for the expansion of instruction, particularly in the Upper and Graduate Divisions. Such men, either already eminent or of assured promise, could not be successfully sought until these first two problems had been solved, and until the University had a scale of academic compensation comparable to that of like eminent institutions in the United States. If the budget for 1922-23 can be realized as we propose, the way would seem to be made open for the upbuilding of the University through the recruiting to our faculties of young men of talent and of character.

The University must acknowledge that the 44th Legislature made a most unusual augmentation of University income. It changed the basis of support for the University from five million dollars to nearly nine million dollars. The University's need was grievous and our representatives at Sacramento were able to convince this Legislature of the fact and to secure this great augmentation. The University did not secure the freedom in the use of appropriations that it sought, a freedom essential to the most economic utilization of its means, but the money required was nearly all provided.

My hope is that with our new basis of support and the checked growth of University attendance we may reach an equilibrium and secure a certain stability. Our request upon the next Legislature may be limited to a total appropriation for maintenance and support of the University and all its branches of nine million dollars plus the 7 per cent increase which has been usual since 1910. Except for separate appropriations for the College of Agriculture and for the Southern Branch, it would be in the interest of economy and flexibility were the entire legislative provision embodied in a single appropriation disposable by the Regents in compliance with economical considerations alone. One addition to this conservative legislative programme has the ap-

proval of the Regents, namely, a policy of development for the institutions under the University located in Southern California. The rapid growth of the Southern Branch and the still inadequate provision for students seeking instruction there warrant the University asking from the three next ensuing Legislatures extraordinary provisions. The successive steps, in my opinion, should be as follows:

For the fiscal period 1923-25:

- (1) An extraordinary appropriation for new grounds and buildings for the Southern Branch.
- (2) A decision by the Legislature as to the location of the University Junior College of Agriculture in the South.

For the fiscal period 1925-27:

- (1) An addition to the regular appropriation for the maintenance of the Southern Branch sufficient to organize staff and facilities to utilize the new grounds and buildings provided during the preceding biennium.
- (2) An extraordinary appropriation for the construction of a group of buildings for the Junior College of Agriculture.

For the fiscal period 1927-29:

- (1) An additional appropriation to organize instruction in the Junior College of Agriculture in the South, for which facilities will have been provided during the preceding biennium.

Thus, under this programme, the end of eight years will see a greatly expanded University institution in Southern California embracing instruction in three colleges: the Teachers' College, Junior College of Letters and Science, and Junior College of Agriculture. It is believed that the development here recommended will, by 1929, be adequate to take care of that considerable body of students who will prefer to receive Junior College and Teachers' instruction in Southern California rather than in Berkeley.

It is difficult to estimate what should be the additions to the Southern Branch fully to meet the requirements of that region. This much, however, may be said: that current statements of the number of students denied admisison at the Southern Branch and many estimates as to the necessary growth of that institution are exaggerated. The number of actually qualified applicants to the Junior College at the Southern Branch in September

who could not be given admission was probably not large. No actual figures exist on this point and all surmises are misleading.

At the present time California north of the Tehachapi and California south of the Tehachapi have the following approximate relations: The north seems to have 60 per cent of the population and 60 per cent of the property valuation. The exact figures including the rates of growth are as below:

Northern Population			Southern Population		
Number	Per cent of total State	Year	Number	Per cent of total State	
1,173,000	79.9	1900	311,000	20.1	
1,610,000	67.6	1910	765,000	32.3	
2,061,000	60.2	1920	1,365,000	39.8	
Property Valuation			Property Valuation		
Amount	Per cent of total State	Year	Amount	Per cent of total State	
1,897,000,000	65.0	1912	1,021,000,000	35.0	
2,034,000,000	62.9	1914	1,198,000,000	37.1	
2,311,000,000	62.1	1917	1,141,000,000	37.9	
2,728,000,000	59.9	1920	1,826,000,000	40.1	

Should the present rate of growth in Southern California continue for another decade and should the rate of growth of the central and northern portion of the State not be accelerated, by 1930 the south would have 45 per cent of the population and probably a comparable percentage of wealth while the north and central portions would have but 55 per cent of the same. For a variety of causes, however, it seems probable that the rate of growth in the southern counties will not be as rapid in the coming decade as it has been in the past while the growth in the San Joaquin and Sacramento valleys and in the San Francisco Bay industrial region will probably be accelerated. The whole subject has not been scientifically studied, but its investigation is an undertaking to be desired.

At present about 40 per cent of high school graduates come from the southern counties, including Los Angeles. Of this percentage of high school graduates, an unknown proportion annually go to eastern institutions. Another considerable element enter Stanford University, which has always been popular in Southern California. The present number at Stanford is 586,

or about one-fifth of Stanford's total attendance. Another large element attend the several denominational colleges of Southern California and further elements either come to Berkeley or are applicants for admission to the Southern Branch. Just what this last element is cannot as yet be precisely ascertained. I think, however, that the University is under obligations to strive to offer at the Southern Branch, Junior College instruction for all properly prepared applicants who prefer to take their first two years of college work there. The University will be relieved of a large part of this responsibility, however, through the development of the following Junior Colleges in Southern California: Riverside, Santa Ana, Fullerton, Pomona, Ontario, San Diego, and Santa Barbara. Under the new plan of organization of these colleges, these seven, out of a total of sixteen, will be accessible to the population south of the Tehachapi. The principal attendance of the Junior College at the Southern Branch will come from Los Angeles city and county. Los Angeles County graduated from high school in 1921, 4167 students. Estimates for succeeding years based on the growth of graduation of the last twenty years are as follows: 1922, 4967; 1925, 7367; 1928, 9767. Of the graduates from high schools not more than 50 per cent normally receive the Principal's recommendation for entrance to the University. Of this 50 per cent, it seems improbable that more than half will choose the Junior College of the Southern Branch in preference to other educational institutions. This gives us a possible figure for applications at the Southern Branch during the next six or seven years. I should say that in August, 1922, we should expect from 800 to 1000 applicants, of whom not more than 800 would be graduates of Los Angeles County high schools, and that by 1928 this figure may be counted upon to rise to from 1500 to 2000. This is assuming that the growth in population and of school attendance in Los Angeles County will attain the same proportions in the present decade that it did in the last. An attendance in freshmen and sophomore classes of the Junior College at the Southern Branch of 4000 by 1928 seems to me the maximum attendance to be anticipated.

The responsibility for teacher training at Los Angeles we share with seven other State Teachers' Colleges. Our Teachers' College should be organized to meet the recurring annual demand for replacement of teachers and growth of schools in a district made up of the counties of Los Angeles, San Bernardino, Inyo, and parts of Riverside and Kern. The probable need is not far from 500 graduates annually. I think that the undertaking which we are called upon to make at the Southern Branch, while large, is not staggering and is not beyond the resources of the University and of the State.

The programme as stated above has made no reference to the enlargement of our Medical Schools. Favorable development here may require an appeal to the Legislature for extraordinary appropriations, first, to meet donations from the outside for enlarged buildings and hospital facilities for the undergraduate Medical School, contingent upon equal legislative provision, and, second, a possible similar offer of private assistance toward a Medical Polyclinic or Graduate School of Medicine at Los Angeles. These requirements may be large, even involving a legislative appropriation of several million dollars. As they would be for permanent improvements, they might take the form of a bond issue. They should be regarded in any case as extraordinary expenditures made in order to secure for the State great private benefactions.

Another extraordinary need is student dormitories at Berkeley. This need cannot much longer go unheeded. It is my hope that, beginning with the fiscal year 1922-23, or at latest with 1923-24, a definite sum can be provided as a permanent building fund. This sum should not be less than \$350,000, and it should be continuously devoted for a period of five or six years to student dormitories. These dormitories should be modern and convenient buildings, each one so equipped as to house about 150 students in interior units of twenty to forty preferably at a monthly student cost of not more than ten or twelve dollars. Five years progressive building of this kind should give the University ten structures housing from 1500 to 2000 men and women, or a number now equal to the number accommodated in

fraternity, sorority, and club houses. This would be an immense relief to the student housing problem and a very great encouragement to the University student body.

The above matters of policy seem to me to be among the most important concerns of the University at the present time.

The proposal to separate the College of Agriculture from the University has perhaps overshadowed all other University interests, but as this problem has been confided by the Legislature and the Governor to a special commission of investigation I shall not undertake to comment upon this matter until all concerned have had the benefit of this commission's report.

Respectfully submitted,

DAVID P. BARROWS.

SUMMARY OF REPORTS

Agriculture.—The year 1920–21 has been marked by an effort to separate the College of Agriculture from the University of California; a more definite determination of the internal organization of the agricultural activities of the University; a decided decrease in the work of the college because of shortness of funds; a very substantial increase in the funds appropriated by the State for the coming biennium; and the development of plans for fundamental changes in the teaching policies of the College.

In January, 1921, the State Legislature appointed a joint committee of six members, three each from the Senate and the Assembly, "to investigate the present status" of the College of Agriculture, including the University Farm School. This came as the result of a feeling in some quarters that the College of Agriculture should be separated from the University of California. The committee made two visits each to Berkeley and Davis, and on February 25, 1921, held a large public hearing in the Assembly Chamber at Sacramento. After several conferences, it was finally agreed that for the present no action would be taken toward the separation of the College of Agriculture from the University. Instead, the Legislature has provided for a commission to study the entire problem of agricultural instruction and investigation in California, and to report their findings to the 1923 Legislature. It is to be hoped that the commission will interpret its function broadly, and prepare a comprehensive working plan for the development of California's agricultural teaching and research, including the college, junior colleges, farm schools, and high schools. Such a working plan, prepared and carried out in a spirit of coöperation and mutual good-will among all interested parties, can be of the highest importance in the development of a greater agriculture for California.

Prior to 1919–1920, the organization of the University was such that all Regents' appointees in agriculture were members of the Department of Agriculture, with all branches of the agricultural service having equal privileges and powers in the departmental organization. By action initiated by the Academic Senate in October, 1919, and later approved by the Board of Regents, membership in the various departments of the University was limited to those engaged in strictly academic work. This at once deprived more than one-half of the agricultural staff of their voting power in departmental matters.

The anomalous situation had thus developed that there was now no name and no unified organization for the agricultural group as a whole. Realizing that unity of organization and of administration is essential if a College of Agriculture is to be effective, the agricultural staff on October 22, 1920, with 121 affirmative and 6 negative votes, recommended

a plan of organization for the agricultural group as a whole. With slight modifications in wording and arrangement, the Regents at their meeting of February 8, 1921, approved the essentials of the plan by adopting the following resolutions:

1. The agricultural service of the University shall be organized and administered as a unit, to be known as the College of Agriculture, which shall include the Department of Agriculture, the Agricultural Experiment Station, the Agricultural Extension Service, and the University Farm School. The College of Agriculture shall comprise all Regents' appointees in agriculture.

2. The Dean of the College of Agriculture shall be the general administrative officer of the College of Agriculture and of all its parts.

3. The College of Agriculture shall be under the jurisdiction of the Academic Senate in matters of instruction leading to university degrees. All academic functions in agriculture shall be controlled by a body to be designated for that purpose by the Academic Senate.

In the above organization, the "Department" of Agriculture is the branch of the agricultural unit having to do with academic matters.

Because of shortage of funds, the college has had to reduce its activities in several directions. Fifteen of the vacancies in the staff caused by resignations during the last two or three years have not been filled. This has been doubly serious in that four of the vacancies are full professorships that are important "key" positions. The situation has been especially unfortunate in citriculture.

The printing of bulletins and circulars was almost entirely discontinued during the latter half of the year, with the exception of a few extension publications, the cost of which was defrayed from special extension funds. Hence, the output of published material is smaller than usual. Several manuscripts are ready and will be published as soon as the new funds become available.

Work at the University Farm at Davis, at the Imperial Valley Experiment Station and elsewhere has been seriously hampered by lack of maintenance funds. There is a serious shortage of equipment at Davis both for operating the farm and for teaching and research. At Davis most of the research has been stopped, because large classes and a great demand for public service have left little time for experiment station work. Travel of the college staff in connection with both public service and research has been greatly curtailed, because of a lack of maintenance funds.

In marked contrast to the other activities, there has been no decrease in the agricultural extension work, which has been supported by special appropriations.

The Regents, the Agricultural Legislative Committee and its affiliated organizations, the State Farm Bureau, the State Federation of Women's Clubs, and other organizations have taken an active and very helpful interest in the financial support of the College of Agriculture. The State has made available a substantial increase in the funds available for 1921-1923. With the increased funds, the first care will be to restore present activities to a normal basis. The balance will be used for carefully selected new work.

During the year there has been a marked increase in research productivity in certain divisions of the college. The annual report of the Director of the Agricultural Experiment Station will this year include an account of over two hundred distinct achievements which have a bearing on the agricultural industries or on the rural welfare of the State.

Among the Experiment Station projects which have yielded noteworthy results this year should be mentioned the development of improved methods of orchard and vineyard practice, better irrigation practice, more efficient methods for the control of insect pests and plant diseases, improved methods of preventing animal diseases, especially diseases of poultry, and the development and distribution of higher-yielding cereals.

It is estimated that at least \$25,000,000 was saved last year to farmers of this State as a result of recent improvements in the above mentioned practices developed and made available to the public by members of the Experiment Station staff. Certain farmers who have been personally benefited believe that this estimate is too conservative.

Some of the most important activities of the Experiment Station cannot be measured in dollars, particularly those which deal with the general problems of rural welfare. Divisions which have especially contributed to the commonwealth in this respect during the past year are rural institutions, farm management and agricultural education.

Expansion of the experimental work of the station during the year has occurred through the development of a 40-acre experimental tract on the State's land settlement project at Delhi, in Madera County, for the investigation of the duty of water on various crops under San Joaquin Valley conditions. Also, through a gift of \$2000 from the poultry feed dealers of Petaluma, together with the appropriation of an equal sum by the Board of Supervisors of Sonoma County, it has been possible to place a veterinarian at Petaluma to study poultry diseases.

The year has been notable as being the first normal period in the extension service. Activities made necessary by war-time conditions, and the great disturbance caused by the excessively large number of resignations in 1919-1920, were happily at an end in 1920-1921. The result was a continuity of service heretofore impossible.

The census of 1920 shows that there are 117,690 farms in California, of which 102,755, or about 87½ per cent, are in those counties which have organized extension work. One-eighth of the farms of California are in the 21 counties which do not have farm advisors and farm bureaus. It is hoped that a considerable proportion of these may be reached in the near future. However, the percentage of farmers in organized counties is even now so high that it permits a reasonable judgment of the possibilities of extension work in California.

The continuity of the service given during the year and the natural development of the work itself have resulted in larger demands upon the extension agents in the various counties. The staff has responded by giving greater service to the people without any material increase in the number of agents. During 1919 the farm advisors made 25,116 farm visits to help solve specific problems at the request of the farmers. During 1920 the farm visits so made increased to 26,689. The number of persons who called at the agricultural extension offices in the counties to ask advice increased from 47,306 in 1919 to 57,062 in 1920. There was an increase in the number of meetings from 5479 in 1919 to 8184 in 1920, while the total attendance increased from 206,475 to 323,266. This means that during every working day throughout the year the farm advisors held an average of 27 meetings, at each of which there was present an average of 41 rural persons.

The boys' agricultural clubs increased from the 1919 enrollment of 2084 to 2798, while the number of those who submitted definite records

of their work increased from 1249 to 1660. The net profit made by boys from their farm operations in agricultural clubs practically doubled from \$28,930 in 1919 to \$59,938 in 1920.

The home demonstration agents have found their way into a large activity and have already done much toward the improvement of home conditions. The number of meetings held by them was 1420 in 1919 and 1704 in 1920, while the attendance climbed from 38,178 to 44,624. The number of women joining the farm bureaus has largely increased, due to the stimulus of home demonstration work. There were 3763 women members of the farm bureau at the close of 1920.

Despite the increased activity of the agricultural extension agents, the demand for their services has so far increased beyond their ability to meet it that many of the counties in the state are requesting additional agents, either as assistant farm advisors, home demonstration agents, county club leaders, or subject matter specialists.

The principal projects during the past year have been: (1) an increase in irrigation areas of 602,299 acres; (2) provision for drainage to prevent the accumulation of alkali on 88,799 acres; (3) increased use of cover crops for green manuring purposes on 18,175 acres; (4) tests and demonstrations of commercial fertilizers on 738 farms, using 3517 tons of fertilizer; (5) demonstrations of the use of lime on 470 farms, using 6210 tons of lime; (6) 255 tests of the use of gypsum; (7) sub-soiling and blasting of 5277 acres on 213 farms; (8) treatment of seed wheat for smut by 1005 farmers with seed sown on 167,370 acres; (9) demonstrations of the use of new varieties of barley in a large number of counties; (10) modification of the methods of bean culture on 5473 acres on 190 farms; (11) increased use of grain sorghums on 507 farms covering 20,988 acres; (12) advice on the growing of cotton on 647 farms involving 15,471 acres; (13) procuring 43,458 bushels of improved seed for 611 farms; (14) demonstrations on the modified system of pruning, known as "long pruning," on 3577 farms involving 59,918 acres; (15) advice on the spraying of fruit trees, affecting 38,401 acres on 2306 farms; (16) advice on the methods of grape growing on 39,003 acres on 1425 farms; (17) testing 30,835 cows for milk production in 27 cow testing associations, with the result that 2069 cows were discarded as unprofitable; (18) advice leading to the purchase of 187 purebred dairy bulls, 116 purebred beef-cattle bulls, 203 purebred boars, and 159 purebred rams; (19) computing of balanced rations for 1227 farmers, leading to advice concerning the erection of silos on 90 farms; (20) continuation of encouragement and support to the auction sale method of selling livestock which has now resulted in the sale of over \$3,000,000 worth of hogs in seven counties; (21) 95 culling demonstrations in flocks totalling 17,066 hens, of which 23 per cent were discarded as unprofitable; (22) distribution of farm building plans to 269 farmers; (23) conducting free labor agencies by which 9052 farm laborers were supplied to farmers; (24) assistance in the formation of 39 coöperative marketing associations which in their first year did a business of over \$3,714,500, with an estimated saving of \$117,295; (25) improvement of farm homes through advice which resulted in the installation of 159 septic tanks, 33 water supply systems, 100 home lighting plants, and the improvement of home grounds on 55 farms; (26) furtherance of community improvement through the farm bureaus by the erection of 14 community halls, the improvement of 75 rural schools, the improvement of 271 miles of roads, and the maintenance of rural fire companies which in the aggregate effect an annual saving of a quarter of a million dollars.

A change was made in the Farm School curriculum whereby fewer courses were specified as requirement for graduation, thereby allowing the student greater freedom in the selection of elective work. This was done in order to meet the needs of students who wish to come for only one year of practical work. No reduction was made in the number of units required for graduation.

The work for students training under the Federal Board for Vocational Education has continued. For the most part, these men take the regular Farm School courses, but special classes were organized in tractor work, mathematics, and bookkeeping. During the year a number of the men withdrew in order to avail themselves of opportunities offered under some of the land colonization projects of the Federal Board.

Six short courses were given during the year. A summer session of six weeks for teacher-training, attended by about one hundred students, was conducted in the summer of 1920.

By invitation of the Regents of the University, following plans outlined by Dean Thomas F. Hunt, delegates officially representing more than forty important organizations connected with California agriculture met with the Regents' Committee on Agriculture and the general administrative officers of the University on October 13, 1920. This conference, devoted to the discussion of matters of mutual interest, was spoken of afterwards by several of the prominent men present as marking a new epoch in the development of agriculture in California. Those present seemed to have gained a new vision of the breadth of California's agricultural interests, and of what can be accomplished for the State by coöperation.

Dean Hunt spent the year abroad on sabbatical leave. He was chosen as the American representative at the International Institute of Agriculture, and accordingly spent a large portion of the year in Rome. During his absence, Walter Mulford, Professor of Forestry, served as Acting Dean.

The following list of Experiment Station publications for 1920-1921 comprises only a portion of the published work of the staff. Of the following publications, 369,200 copies have been printed, of which approximately 190,000 have been distributed. The mailing list has increased to over 39,300. Publications are, however, no longer sent to a general mailing list, but are sent free upon request.

REPORT

of the College of Agriculture and the Agricultural Experiment Station of the University of California, July 1, 1919 to June 30, 1920:

BULLETINS

323. Heavy vs. Light Grain Feeding for Dairy Cows. F. W. Woll, E. C. Voorhies and C. V. Castle.
324. Storage of Perishable Fruits at Freezing Temperatures. W. V. Cruess, E. L. Overholser and S. A. Bjarnason.
325. Rice Irrigation Measurements and Experiments in Sacramento Valley, 1914-1919. Frank Adams.
326. Brown Rot of Apricots. W. L. Howard and W. T. Horne.
327. Commercial Fertilizers, 1919-1920. W. D. Dore.
328. Prune Growing in California. A. H. Hendrickson.
329. Walnut Culture in California. L. D. Batchelor.

CIRCULARS

- 220. Unfermented Fruit Juices. W. V. Cruess.
- 221. How California is Helping People Own Farms and Rural Homes. Elwood Mead.
- 222. Fundamental Principles of Cooperation in Agriculture. G. Harold Powell.
- 223. The Pear Thrips. E. O. Essig.
- 224. Control of the Brown Apricot Scale and the Italian Pear Scale on Deciduous Fruit Trees. E. O. Essig.
- 225. Propagation of Vines. F. T. Bioletti.
- 226. Protection of Vineyards from Phylloxera. F. T. Bioletti.
- 227. Plant Disease and Pest Control. W. T. Horne and E. O. Essig.
- 228. Vineyard Irrigation in Arid Climates. F. T. Bioletti.
- Forms of Organization of the County Farm Bureau Exchange. W. R. Camp.

REPRINTS

Bulletins

- 241 and 246. Vine Pruning in California. F. T. Bioletti.
- 278. Grain Sorghums. B. A. Madson.
- 285. The Milch Goat in California. E. C. Voorhies.
- 294. Bean Culture in California. G. H. Hendry.
- 297. The Almond in California. R. H. Taylor.
- 298. The Seedless Raisin Grapes. F. T. Bioletti.

Circulars

- 87. Alfalfa. W. T. Clarke.
- 110. Green Manuring in California. J. W. Nelson.
- 111. The Use of Lime and Gypsum on California Soils. J. W. Nelson.
- 113. Correspondence Courses in Agriculture. F. L. Griffin.
- 151. Feeding and Management of Hogs. J. I. Thompson.
- 161. Potatoes in California. J. W. Gilmore.
- 166. County Farm Bureau. B. H. Crocheron.
- 209. The Function of the Farm Bureau. B. H. Crocheron.

SEPARATES FROM THE ANNUAL REPORT

Results of the Investigations on Deciduous Fruits, Olives, Figs, Nuts and Fruit Products for the Year Ending June 30, 1920.
 Work of the Division of Veterinary Science, from July 1, 1919 to June 30, 1920.
 Annual Report of the Director of Agricultural Extension for 1920-1921.

Anthropology.—The total enrollment for the year 1920-21 in the introductory course, Anthropology 1A-1B aggregated 1487 students. Each member of the class, in addition to the three lectures each week, attended a one hour section meeting in which reading assignments were discussed and specimens were exhibited for closer observation. The importance of such meetings cannot be stated too emphatically. There is no textbook in anthropology, but the department lately has issued a *Source Book in Anthropology* which contains material for discussion in section meetings. Additional material is furnished by *Three Essays on the Antiquity of Man* (University of California Syllabus Series, No. 119) prepared and put into circulation this year by Dr. A. L. Kroeber, Professor of Anthropology and Curator of the Anthropological Museum.

The usual courses in general ethnography and American ethnology were given in the Upper Division. During the second semester a new course, *The Growth of Society: Inventions*, was given by Dr. T. T. Waterman, Associate Professor of Anthropology.

Graduate work in anthropology was pursued by a group of students under the direction of Professor Kroeber, the aim being to familiarize the students with problems of distribution and field methods. For the latter purpose the services of a Pomo Indian were secured. This work has resulted in a series of papers on the several aspects of the ethnology of the Pomo Indians which may form the basis of a thorough monograph about this tribe.

E. W. Gifford, Associate Curator of the Anthropological Museum, was granted a leave of absence of one year beginning July 1, 1920, to pursue investigation in Polynesia under the auspices of the Bishop Museum of Honolulu.

Two special exhibitions, each lasting one week, were held at the Anthropological Museum in San Francisco. The total number of visitors since May 15, 1920, up to date, is 8617. About 1000 children, representing classes from the public schools, visited the Museum with their teachers.

Paul Louis Faye, Associate Curator of the Anthropological Museum and Lecturer in Anthropology, gave the following public lectures: September 3, 1920, *Navajo Blankets*; March 6, 1921, *Skull Fashions of Ancient Peru*; and in Berkeley, March 22, 1921, *Inca Skulls and Mummies*.

Among the persons who have contributed by gifts to enrich the Museum collections must be especially mentioned the late Mrs. Phoebe A. Hearst, Mrs. J. C. Hawver, Mr. R. L. Roys, Mr. K. E. Robertson, Mr. C. B. Moore, and Professor Elwood Mead.

The important collection of physical anthropology material made by Dr. M. Uhle in 1903-05, in the Hearst Archaeological Expedition to Peru, was identified and catalogued. This collection, in addition to about 800 skulls and other skeletal material, comprises a lot of about 50 mummies which, at the time of their reception, it was deemed better to leave unpacked in order to avoid deterioration. However, in collaboration with the staff of the X-Ray clinic of the University Hospital, they are being identified. The negatives thus obtained permit us not only to locate material implements which were buried with the dead, but also to study, in some cases, pathological lesions of medical interest.

Investigations were conducted during the year among the Miwok Indians of Central California by Miss L. Freeland, Research Fellow in Anthropology; among the Cupeño by Mr. Paul Louis Faye; and among the Diegueño by Dr. L. Spier, Associate Curator of the Anthropological Museum and Lecturer in Anthropology.

Dr. Spier resigned August 15, 1920, to accept the chair of Anthropology at the University of Washington.

Architecture.—Owing to the fact that students are admitted to the Department of Architecture only after two years of University work, and that there were therefore very few coming in during the war, the Department of Architecture was this year only beginning to recover its pre-war attendance. The coming year will be the first under approximately normal conditions. However, one hundred and ninety students took at least one course in this department.

In spite of diminished numbers, there has probably never been a time when there was more distinguished talent among the students of the department. During the year there have been fifty-two awards of first grade, and three medals, in architectural design. The Alumni Prize (with medal) was awarded to L. E. Gowen.

In addition to the regular exhibitions of the work of the architectural students, a series of exhibits of drawings and paintings by outsiders has been held under the auspices of the department with a registered attendance of more than seven thousand.

The department has received gifts of books, periodicals and pamphlets from Mrs. Clinton Day in memory of her late husband, from Mrs. Louise L. Kidder in memory of the late Joseph Worcester, a monograph on the Altoviti Aphrodite from Mr. John D. Rockefeller, Jr., and several groups of books from anonymous friends. A gift of forty dollars from Mrs. E. T. Spencer, increased to one hundred dollars by other friends, has

been set aside for the striking of the die for a medal, to be awarded from time to time for specially fine designs.

The Department of Architecture is very much in need of more space. A room should be provided for the study of the classic orders. The room now used for modeling in clay is entirely inadequate. The usefulness of the Exhibition Hall, which is too small in any case, is very much diminished by the presence of the model of the Lincoln monument. If an extension could be thrown out to the east of the present Exhibition Hall, it would be possible to meet both of the above needs without great expense.

Astronomy.—In recent years it has become more and more apparent that an entirely new Astronomy Building should be erected within a reasonable time. The main building is nearly half a century old and unsuited to present needs for the department has entirely outgrown the available space and equipment. It must be admitted that we have not been able to maintain our instruction at the high level which has given the University of California an international reputation as a training school for astronomers. The seating capacity of the lecture room is inadequate to accommodate the students enrolled in the beginners' course. The departmental library and equipment are unprotected.

The development of astrophysics in recent years as the most prominent branch of astronomy calls for adequate laboratory instruction in lower and upper division courses. This work has been cared for in a makeshift manner. The spectroscopic equipment is scattered throughout the buildings wherever space can be found. The upper division work to prepare prospective astrophysicists for graduate work at the Lick or other large observatories, must hereafter include proper laboratory training in astrophysics, in addition to the advanced preparatory work in mathematics, physics, chemistry and astronomy.

The telescopic equipment is too limited for advanced students and ultimately should include a twelve-inch and a twenty-inch refractor. Climatic conditions in Berkeley are unfavorable to reflectors. A new observatory at the proposed site to care for the present needs and to provide for the most limited expansion to meet present scientific requirements would cost probably \$200,000, including equipment amounting to approximately \$75,000.

Among the orbit investigations undertaken are those of Comet b 1920 (Taylor-Skjellerup), by W. F. Meyer, Assistant Professor of Astrophysics; of Comet a 1921 (Reid), by S. Einarsson, Associate Professor of Practical Astronomy, and Professor Meyer; final orbit investigation of Comet c 1919 (Metcalf-Borrelly), by Professor Meyer, including an account of the observations and orbit determinations of this comet, undertaken at the suggestion of A. O. Leuschner, Professor of Astronomy and Director of the Students' Observatory, and Chairman of the Committee on Comets of the International Astronomical Union, to serve as a standard for the future organization of cometary research; orbit investigation of the Pons-Winnecke Comet by R. T. Crawford, Professor of Astronomy, and Dr. Sophia Levy, Research Associate in Theoretical Astronomy, historically representing the first application of Professor Leuschner's Method of Conditioned Solution to a direct orbit determination. This investigation included the determination of the perturbations due to the attraction of the earth and furnished the most precise data with reference to the possibility of meteoric showers at the time of the closest approach of the earth to the comet's orbit.

Properly to conduct important researches now under way in celestial mechanics, principally relating to unsolved problems of motion and to the value of various methods of determining the perturbations of certain classes of planets, funds are necessary to conduct a regularly organized research bureau.

Botany.*—The resumption of the science requirements for the Junior Certificate in the College of Letters and Science has materially increased the elementary enrollment in the Department of Botany. Five hundred students were enrolled in Botany 1, a lecture course. Two hundred thirty students were enrolled in Botany 2A-2B, a lecture and laboratory course satisfying science requirements and a prerequisite for certain courses in household art. One hundred fifty students were enrolled in Botany 3, a lecture and laboratory course in general botany organized for students in agriculture. Since an elementary course in botany is required for all students in the College of Agriculture, the Department of Botany co-operated with the various divisions of the College of Agriculture and organized a course adapted expressly to meet the requirements of the College of Agriculture. The enrollment in advanced courses, both upper division and graduate courses, has increased proportionately. Important research problems are being pursued by no less than twenty advanced students in the fields of cryptogamic taxonomy, phaenogamic taxonomy, cytology and histology.

This year has seen a valuable addition to the department's teaching staff in Dr. R. M. Holman, Assistant Professor of Botany, whose specialty is plant physiology. Dr. Holman has carried the instruction in Botany 2A-2B and Botany 3, and will also be able to meet the need for courses in plant physiology. Dr. N. L. Gardner, Assistant Professor of Botany, has been assigned to upper division work, and has been made Curator of the Herbarium. The Herbarium staff now includes the following persons named as Honorary Curators: Dr. H. M. Hall, formerly Associate Professor of Economic Botany, now with the Carnegie Institution of Washington, D.C.; and Mr. S. B. Parish and Mr. T. S. Brandegee, two California botanists of note.

The chief handicap of the department is lack of proper class room facilities, laboratory space, proper microscope cases, student lockers, etc. The need for additional space to accommodate the increasing number of students under instruction in this department was met in part four years ago by taking over the small building known as the Chemistry Annex. Alterations in the Botany Building which now houses the laboratories of phaenogamic and elementary botany, begun but not completed in the Christmas recess of 1920-21, have made possible an additional laboratory for elementary botany.

Two phases of botanical science which the department is not able to give and for which there is a great demand are plant physiology and economic botany. To meet the demands for a course in plant physiology, a properly equipped plant physiology laboratory and a greenhouse is needed.

The people of the State are making use of the collections composing the Herbarium and of the services of the staff in an ever increasing degree. In addition to the exchange of material received during the past years from various persons of the State, including members of the department,

* A list of gifts to the Department of Botany, its garden, museum and herbarium will be found on pages 215-217.

the Herbarium has acquired accessions from similar institutions in return for material sent from the University Herbarium. Another way in which the collection is demonstrating its value is by the loan of material for purposes of research to institutions both within the State and beyond its borders. It is very desirable that the representation in the Herbarium of flowers of the Pacific country other than Western North America be largely augmented by securing exchanges from herbaria abroad. Dr. W. A. Setchell, Professor of Botany, has contributed to the Herbarium some valuable specimens collected on his recent trip to the Samoan Islands.

Adequate provision for the proper maintenance and growth of the Herbarium is necessary. To protect properly the collections from insect attack and risk of loss by fire some years ago a policy was adopted of purchasing a number of steel cases annually. At present not half of the total number of sheets are so protected and there are on hand ready for mounting and for which at present no storage facilities are provided, enough specimens to raise the total collections at least to a quarter of a million sheets.

The department is looking forward to a building which will properly coördinate work in the department now carried on in three different buildings; namely, phaenogamic botany and elementary botany now given in the Botany Building; cryptogamic botany, cytology and histology now given in the Chemistry Annex; and lectures in the various courses in Botany which have been given in general lecture rooms. The Herbarium and Museum now occupy the top floor of the Mining Building.

In spite of serious handicaps, the Department of Botany has progressed appreciably, both in the number of students instructed in botanical science and in research accomplished.

The California representatives of the families *Liliaceae*, *Cyperaceae*, exclusive of *Carex*, *Junaceae*, *Asclepiadaceae*, *Primulaceae*, *Gentianaceae*, and *Lobeliaceae* have been the subjects of continued critical investigation by Dr. W. L. Jepson, Professor of Botany, and the final results are now reduced to typed copy. Professor Jepson has also coöperated with Mr. K. K. Mackenzie of New York, assisting him in the presentation of his studies of *Carex*. Similar assistance in connection with the study of grasses has been given to Dr. A. S. Hitchcock, Agrastologist of the U. S. Department of Agriculture. Professor Jepson has also undertaken certain field investigations of the California vegetation, designed to present an illustrated account of the botany of the San Joaquin Valley.

In the field of cryptogamic botany, Professor W. A. Setchell has undertaken the work of determining the role played by a group of lime-producing Algae, known as the *Corallinaceae*, in the building of the coral reefs of the tropical islands of the Pacific. A visit was made during the summer of 1920 to Samoa to obtain first hand data. The work is being done under the auspices of the Carnegie Institution of Washington, D. C.

Professors Setchell and Gardner have made substantial progress during the past year on the study of the marine flora of the Pacific Coast. During the year over fifty species new to science have been discovered, described and figured, and are now practically ready for publication. These preliminary studies have prepared the way so that Part III, the *Melanophyceae* of *The Marine Algae of the Pacific Coast of North America*, is well along towards completion. Parts I and II, the *Myxophyceae* and *Chlorophyceae*, respectively, have been previously published.

Professor Setchell, Dr. T. H. Goodspeed, Associate Professor of Botany, and Dr. R. E. Clausen, Assistant Professor of Genetics, have made further

studies of inheritance in *Nicotiana* under four general heads: (1) Mendelism in *Nicotiana Tabacum*; (2) heredity in interspecific hybrids; (3) size inheritance; (4) genetics of bud variation.

Studies on the origin of rubber and on seasonal variation in rubber content in *Chrysothamnus nauseosus* var. *viridulus* have been continued by Professor Goodspeed, who has also been engaged upon cytological studies in *Nicotiana* and upon an investigation of the role of pollination in the setting of fruit by the Sultanina grape.

Chemistry.—At present the foremost problem of the Department of Chemistry is to furnish fundamental training in chemistry in the largest measure compatible with limited staff, space, and material resources. Enrollment in chemistry courses, from freshman to graduate, is twice as great as it was in 1915. The number of instructors and professors on the staff of the department is the same as it was in that year. This has led to placing greater responsibility for work of instruction in the hands of inexperienced men. However, in spite of all precautions, it is probable that the grade of instruction in the elementary courses has fallen below the standard maintained before the war. The restriction of a number of upper division courses to students of the honors group has been highly successful, and it is probable that the department will desire in the future to increase the number of courses which are so restricted.

The following investigations, many of which are published or are in course of publication, have been carried on by members of the staff with the coöperation of numerous graduate students. Dr. W. C. Blasdale, Professor of Chemistry, has continued his work on various equilibria in aqueous solutions, which is fundamental to the utilization of brines and natural salt deposits; he has also carried on further work looking to the improvement of certain methods of analytical chemistry. Dr. W. C. Bray, Professor of Chemistry, has resumed his study of catalysts in heterogeneous reactions, partly with a view to a more thorough understanding of certain powerful catalysts which he obtained for the use of the army during the war. Numerous investigations in the field of homogeneous catalysis are also under way. Professor Bray and Dr. H. E. Miller, Research Associate in Chemistry, have discovered and interpreted the first known case of a periodic reaction in a homogeneous system. Dr. G. E. K. Branch, Assistant Professor of Chemistry, has prosecuted several investigations concerned with the structure and properties of highly unsaturated organic compounds. Dr. F. R. Bichowsky, Research Associate in Chemistry, has completed a determination of the free energy of formation of sulfate ion, and is continuing his research on phosphorus compounds. The investigations of Dr. E. D. Eastman, Assistant Professor of Chemistry, have dealt chiefly with the specific heats of metals, especially such as possess mobile electrons. Dr. G. E. Gibson, Associate Professor of Chemistry, has continued his experimental test of the third law of thermodynamics, has completed with Dr. Noyes a study of the suppression of metallic spectra by certain chemicals, and is attempting to produce the decomposition of an element in chemically measurable amount. Dr. J. H. Hildebrand, Professor of Chemistry, has pursued in several directions the large task of interpreting and predicting the solubility of one substance in another. This investigation has in part taken the direction of measuring the internal pressure of liquids. The properties of electrolytes dissolved in alcohol have also been studied. Dr. W. M. Latimer, Instructor in Chemistry, has pursued his investigation of specific heats to lower temperatures than heretofore, and in this work tempera-

tures down to the point of liquefaction of hydrogen have been employed for the first time in this country; he has also proposed a theory of the entropy of solids and gases which will have far-reaching consequences. Dr. G. N. Lewis, Professor of Chemistry and Dean of the College of Chemistry, and Dr. M. Randall, Assistant Professor of Chemistry, have brought nearly to completion the book upon which they have been engaged for twelve years, *Thermodynamics, and the Free Energy of Chemical Substances*. They have also published papers on the thermodynamic properties of concentrated solutions and on the activity coefficients of strong electrolytes, the latter paper including a simple but comprehensive theory of the complex phenomena of dissolved electrolytes. Professor Lewis has also continued his work on the entropy of substances, and has shown by means of the theory of ultimate rational units how the entropy of monatomic gases may be calculated with precision. Dr. A. B. Olsen, Research Associate in Chemistry, has continued his study of the ionizing potentials of gases, and with Dr. E. Dersham, Instructor in Physics, has made a thorough study of the interaction between X-rays and material substances. Dr. C. W. Porter, Associate Professor of Chemistry, has been seeking an organic substance containing univalent oxygen, and one substance obtained shows much evidence of belonging to this new category; he has also pursued his studies on organic dyes. Professor Randall, in addition to the work previously mentioned, has determined the free energy of sulfuric acid, and has conducted several investigations dealing largely with the properties of electrolytes. Dr. W. H. Rodebush, Research Associate in Chemistry, who is unfortunately leaving us to become head of the division of physical chemistry at the University of Illinois, has made a theoretical study of the relation of entropy to probability, and has completed an experimental study of the heat capacity and entropy of cadmium. Dr. T. D. Stewart, Assistant Professor of Chemistry, has conducted several researches in organic chemistry, one of which on the derivatives of amine oxide has been brought to completion and throws new light on the structure of these peculiar compounds.

Civil Engineering.—On July 1, 1920, two additional instructors were added to the staff, mainly to reduce the number of students per section in lecture and field work in surveying courses. The Department of Civil Engineering gives prescribed surveying instruction to students in all engineering colleges, in architecture, and in agriculture, while a few persons each year elect surveying from the Colleges of Letters and Science, Commerce, and Chemistry. It is desired to keep sections of this work below thirty men each, preferably at the number twenty. With the growth of the institution it will be necessary to increase the number of younger instructors, if these desirable requirements for surveying are to be realized. A. J. Eddy, Associate Professor of Civil Engineering, resigned effective June 30. Professor Eddy is succeeded by R. E. Davis, Associate Professor of Civil Engineering. C. J. Nobmann, Instructor in Civil Engineering, also resigned effective June 30, 1921, to return to engineering practice. In his place P. A. Swafford, formerly Instructor in Civil Engineering, returns.

A one-session Summer School of Surveying at Santa Cruz is now the fixed policy of the department, the four weeks of instruction beginning the day following Commencement. During the winter a considerable conference was in progress between the engineering faculties and the Administrative Board of the Southern Branch of the University at Los Angeles regarding the joint use of the Summer School of Surveying for

students of both parts of the University. It was decided that students at Los Angeles should receive instruction in surveying at their own school; but even if this decision had not been reached through other considerations, it would have been necessary because of the conflicts in calendar.

For lack of a new and larger building, the department has been retarded in its just growth for more than ten years. Recommendations have been made jointly by the departments of Civil Engineering and of Irrigation for a coöperative arrangement if not a coalition, whereby these two departments might conduct together instruction in sanitary, irrigation, and hydraulic engineering, provided additional space can be procured.

C. Derleth, Jr., Professor of Civil Engineering and Dean of the College of Civil Engineering, has been a member of a consulting commission of four engineers who made a thorough examination of the State and county highways of California, Oregon and Washington, and reported their findings in January, 1921, to the Automobile Club of Southern California, and to the California State Automobile Association. This report has been widely circulated and has received favorable comment in highway engineering circles and among highway engineers throughout the United States. The report is in four parts. Part IV is a contribution from the Testing Laboratories of the Department of Civil Engineering, giving the results of strength investigations of concrete highway slabs, plain and reinforced, together with inquiries upon the nature of adobe subsoils. Adobe in subsoils offers one of the difficult problems for solution in the preparation of suitable foundations under highway pavements. Part IV of the Joint Report to the Automobile Clubs was prepared by Professor Derleth and by C. T. Wiskocil, Associate Professor of Civil Engineering.

The San Francisco Bay Marine Piling Committee is planing an investigation of the violent destructive effects produced by teredo. It will be concerned with financial, construction, biological, and chemical studies. An advisory committee of University professors has been appointed, of which Professor Derleth is a member.

The San Francisco Chamber of Commerce has recently accepted a report by Dr. B. M. Rastall, Lecturer in Business Administration, outlining a programme for the betterment and industrial development of San Francisco. In April, 1921, the San Francisco Programme Committee was announced, whose responsibility is to carry out as quickly as possible some of the recommendations in Dr. Rastall's report. Professor Derleth has been invited to become an engineering member of this committee.

Charles Gilman Hyde, Professor of Sanitary Engineering, has recently been appointed a consultant on sanitation, United States National Parks, San Francisco headquarters.

During the past year F. S. Foote, Professor of Railroad Engineering, has been Vice-President of the Pacific Railroad Club of San Francisco. Professor Foote is making studies upon a train control device, involving new principles of control.

W. F. Langelier, Assistant Professor of Sanitary Engineering, has been conducting studies in water purification and sewage treatment. These studies, still in progress, deal primarily with coagulation phenomena upon which the efficiency of water purification and of sewage treatment largely depends. Professor Langelier expects to demonstrate that certain theories in physical chemistry which hitherto have not been considered in the solution of problems of this type, are of fundamental importance,

and believes that the application of these physico-chemical principles will result in new devices of design and operation in engineering works dealing with the treatment of water and sewage.

Drawing and Art.—The policy that mechanical drawing and graphic art be offered as separate major subjects in one department has continued during the past year. It is not practicable to combine these subjects as the drafting board work is specifically part of the training of architects and engineers, while art, in the fine arts sense, is entirely apart in thought, creative effort and design. Thus the department has unanimously placed itself on record in 1920 and again in 1921 as desiring to separate into two departments, one to be known as the Department of Art, and the other as the Department of Engineering Drawing.

In view of the national art movement in education stimulating higher cultural development in the people and the application of design to trades and industries, teachers should have an opportunity to receive a thorough training in the University. The department has arranged curricula to meet all requirements by enlisting the aid of professors appointed in allied departments.

Enrollment in graphic art has increased from 1052 in 1920 to 1995 in 1921. This increased attendance has necessitated changes in classroom arrangements so as to utilize floor space, equipment, and material as continuously as possible without conflict of classes. A large lecture room suitable for an exhibition hall could be used continuously.

Exhibitions of student and professional work have added so much to art interest and stimulation that it seems advisable to show contemporary work throughout the year.

An art library with current publications is needed.

Economics.—The total departmental enrollment for the year was 8485, of which 8241 were undergraduate and 244 graduate students. The twenty-one members of the department have offered sixty-nine courses, of which fifty-three were undergraduate and sixteen graduate courses; fourteen were new courses, of which six were graduate and eight undergraduate. The courses in stenography and typing have been dropped because they seemed inappropriate for work of University standard.

In lower division instruction twelve teaching fellows and several department members have assisted Dr. I. B. Cross, Professor of Economics on the Flood Foundation, in giving the fundamental course in economics. The enrollment in this course would have been fifty per cent larger had the facilities of the department warranted further registration. The need for an increased teaching force in this course is pressing, and will be met only partially next year. In January, the two courses in economic history conducted by Felix Fluegel, Instructor in Economics, expanded from 75 and 100 respectively, to classes of 500 and 600 students. The departmental budget for the ensuing year will not permit any assistance for him except that of readers. The same handicap limits the work of the Group B courses of the Upper Division, and that of E. A. Kincaid, Instructor in Economics. At least six additional teaching fellows for the lower division work and a force of teaching fellows to supplement the lecture work in the Group B courses are urgently needed.

Graduate students call for attention that at present cannot be freely given because of the continuous demands of other University service. The graduate work of the department grows amazingly. It is matter for just satisfaction that the department has as its group of graduates, seasoned

men and women from all parts of the United States, from Canada, and from Europe. It is on the other hand cause for regret that stress of other duties puts narrow limits upon the time instructors can give these students. An unremitting call from the outside public adds to the pressure of work due to larger classes and increased graduate instruction.

Though the research time of the department members has been greatly abridged, each member of the department reports on some research as follows. Dr. C. C. Plehn, Professor of Economics on the Flood Foundation, has a new book, *Legal Principles of Taxation*, well under way. Dr. S. Daggett, Professor of Railway Economics on the Flood Foundation, has published a pamphlet on the *Railroad Rate Discrimination Provision of the Merchant Marine Act of 1920*. A *History of the Southern Pacific Company* is nearing completion. The book will probably appear during the spring of 1922 as he has signed a contract for its publication. Professor Cross has completed a *Report on the Cost of Living and Wages in the Building Trades in San Francisco*, and a report on the *Causes of the Housing Shortage in San Francisco*, presented to the Building Trades Arbitration Board and subsequently printed; and a *Report on the Cost of Living and Wages in the Printing Trades of San Francisco*, presented to the Printing Trades Arbitration Board. Professor Cross has nearly completed a book on foreign exchange.

Dr. S. Blum, Associate Professor of Economics, and Dr. J. B. Peixotto, Professor of Social Economics, have served upon a committee called by the State Civil Service Commission to prepare three quantity and cost budgets to be used in adjustment of wages and salaries of the laborers, clerks, and executive officers of the State of California. A lengthy report was completed in March. The Civil Service Commission is now making the study ready for publication. It should appear in October. Professor Blum is at work on a book on the principles of labor economics. Professor Peixotto has in preparation some studies in the standard of living. She has also published *The Control of Poverty* (University of California Syllabus Series, No. 123).

W. Leslie, Assistant Professor of Economics, has in the past twelve months undertaken the investigation of the California State Teachers' Pension Fund and has assisted in the working out of a pension system for the employees of the City and County of San Francisco. He has advised the California Inspection Rating Bureau in the development of a plan of experience rating for California compensation insurance companies; and the Industrial Accident Commission of California in the preparation of a new schedule of death benefits in connection with the Workmen's Compensation Act. He has developed for the State Compensation Insurance a new plan of distributing surplus, which is the only one in existence that takes into account both the experience of the individual risk and the overhead cost of writing insurance; and for the Automobile Club of Southern California a statistical plan of automobile insurance. For the Industrial Accident Commission of Utah he has prepared a plan of supervising workmen's compensation insurance rates, and has assisted in the inauguration of the plan.

Dr. W. Kirk, Assistant Professor of Social Economics, has in hand a book on the work of city departments of charities, the activities of churches, labor organizations and other benevolent bodies in social work.

Caroline Schleef, Associate in Economics, is preparing a study of the housing laws of the United States.

Mr. Kincaid is concluding the research for his doctorate thesis on *The Federal Land Grant to the Central Pacific Railroad*. He has also in hand

certain investigations on state and county aid to railroads in California.

Mr. Fluegel, in addition to his doctorate thesis on *Types of Income Taxes*, which is practically finished, has in preparation for publication a *Source Book on the Economic and Social History of the United States*.

The department continues its policy of placing students where they can do minor independent inquiries for public agencies under departmental direction. The programme of last year for better field work in connection with labor and its problems has for pecuniary reasons fallen short of expectation. A committee of the department consisting of Professors Blum, Cross, and Peixotto, is coöperating with the Extension Division in working out a plan for developing workers' education in the State. One teaching assistant has been assigned to labor economics. This will liberate more of Dr. Blum's time for meetings with appropriate labor leaders. Mr. Kincaid plans next year an arrangement with the Berkeley Chamber of Commerce and other such organizations in the San Francisco Bay region, whereby his students may develop the facts to answer certain special problems in distribution of commodities. During the past academic year students in social economics have been placed and have done satisfactory work for fourteen different agencies.

A special training course for social work was inaugurated last year. After unsatisfactory applicants had been rejected, there was a final enrollment of eighteen. Dr. Kirk conducted the lectures. Coöperation with all agencies for benevolent work in the bay district has been so improved that three of the offices now furnish genuine educational opportunity for practice work. The development is largely due to the fine initiative of Dr. Frances Greene, Supervisor of Practice Work, who was killed suddenly in a street car accident last February. Mrs. Emily Noble, her appointed successor, is carrying forward with marked capacity the personal supervision of students' practice work. The demand for this course grows more insistent and more definite each year.

The department is still without a research bureau. There are numerous services that such a bureau might render which have perforce not been done for lack of personnel and money. The department should keep a cost of living index from month to month for this population area. Data about business administration, foreign trade, financial questions, labor, and charities problems, are obviously important and evidently called for in this State. The need for a Bureau of Economic Research cannot be overemphasized. Neither this nor any other expansion of the departmental curriculum or service has been possible during 1920-21.

Education.—The department began the past year under exceptional difficulties, chiefly due to the prolonged illness of two members of the staff and the impaired health of two others. To meet the situation it became necessary to defer several of the department's plans, to redistribute the work of the staff, and to reduce the number of students by excluding those whose programme admitted of postponement. Thanks, however, to a fine spirit of coöperation within the department and on the part of the student body, the various expedients adopted proved more successful than otherwise could have been expected. Special acknowledgment is due to Superintendents H. B. Wilson of Berkeley, F. M. Hunter of Oakland, and W. J. Cooper of Piedmont, each of whom generously and most successfully conducted, during the second semester, a class for prospective teachers.

Apart from the urgently needed expansion in scope of service, gratifying progress has been made during the year toward the solution of the

very complex problem of adequately embodying and correlating the purposes (1) of the College of Letters and Science, (2) of the Graduate Division, (3) of the extra-mural service center, and (4) of a professional teacher-training institution. The work of the University High School, and research activities may be regarded as partial illustrations. Further, every effort has been made to provide each student with a unified programme of instruction and training, and while some classes have been too large, it has been possible to limit the number to forty in central foundation courses and to twenty in courses of the seminar or pro-seminar type. Attention should be called also to the very promising bi-monthly conferences of candidates for higher degrees with the department staff. In all these matters of organization and effective functioning the department has acted as a unit, with due regard, of course, to each member's particular interests in the field of education.

Among the general projects for next year there are three that should at least be indicated. One is that of furthering the training of junior high school teachers and the solution of junior high school problems. The second is that of meeting more adequately than hitherto the long-felt want of courses in educational supervision. The third is that of organizing and directing, in partnership with the Berkeley School Department, an elementary observation and demonstration school. The carrying out of these plans, the department feels confident, will lead to new forms of effective coöperation with the teachers' colleges of the State, and eventually will add much to the general educational welfare.

The need of a building for the Department of Education is about to be supplied. This fact implies not only vastly increased facilities, but also corporate morale and a quickening of the professional spirit.

A professional doctor's degree has been established, a degree planned to serve as an intrinsically worth while objective for school men and women who are on the way to expert educational leadership.

Noteworthy progress has been made in the organization of instruction and the supervision of students' programmes. It is hoped that by the end of another year recommendations for teachers' certificates will mark a measurable advance in the adjustment of the requirements of broad and specialized scholarship to the educational needs of our schools.

The School of Education has created an advisory committee, consisting of the State commissioners of education, the president of the State Teachers' Association, and five elected members.

In accordance with a suggestion made by the President of the University, a committee of the school has been appointed to assist in working out adequate articulations between the new teachers' colleges and the University.

A consideration of the activities of the Bureau of Research in Education leads to the conviction that a new name is necessary. Over half the work of the bureau is more distinctly of service rather than of research type. All the functions of the bureau would be covered by the designation, "Bureau of Educational Research and Service." Out of the \$2000 set aside for research in education during the fiscal year 1920-21, \$1255.27 has been spent for standard tests, chiefly in elementary school subjects. It will be a matter of only two or three years before the handling of the test materials can be put on a purely commercial basis and given over to one of the larger publishing houses. Meanwhile the Department of Education will have rendered exceedingly valuable pioneer service in this field. The Bureau of Research in Education has issued three publications, an *Announcement*, outlining possibilities of service and listing a large

number of research topics; *A Survey of School Products* in the Berkeley schools, in two parts; and *A School Building Survey and School Housing Programme for Napa, California*. These are all valuable publications and will be sent free to leading educators of the State. The Napa Survey was published at the expense of the Napa Board of Education and the Union High School Board. The Berkeley Board of Education paid one half of the cost of the Berkeley Survey. Such coöperation is very gratifying. The first function of the Bureau of Research, namely that of enlisting teachers and school officials in a first-hand study of educational problems, has been carried into effect by the formation of important study groups. During the year three such groups have been established: one at Claremont, under Mr. W. H. Hughes; another at Oakland in the Prescott School; and a third at Berkeley among students and schoolmen, on the problems of school legislation. In addition, the bureau has kept in touch with a number of individuals throughout the State who are working on special problems. It is proposed to consolidate and to enlarge all work of this type under one coördinating head. The bureau has aided a number of important graduate studies, some of statewide and two of nation-wide scope. The greatest need of educational research in the University is that relative to a director or otherwise-named central correlating agent.

The University High School has had a most successful year. This was in a large measure due to the fact that the increased subsidy from the University made it possible to begin the complete organization of the school. The addition of the Advisor for Girls in the person of Miss Saidee Sturtevant completed the administrative staff. The second addition in the organization consists of supervisors who give the "methods course" in the University and direct the teaching of the student teachers. Nine of the twelve were paid by the University. The third division consists of the heads of departments paid by Oakland and responsible to the principal for administrative details. Up to date four of the departments have been so organized. In the fourth division are regular teachers performing the same functions as in any other high school. The fifth group consists of graduate students from the University. This complex organization has grown up in order to give the best possible teaching experience and training to beginning teachers without detriment to the pupils. Another source of added expense in this school is the small number of students in the classes, the average being a fraction over sixteen. There are two sufficient reasons for this small number: to provide the most favorable conditions for pupils and beginning teachers; and to provide sufficient number of classes to accommodate the graduate students. In the second semester there were seventy-six graduate students in practice teaching, distributed as follows: agriculture, 1; chemistry, 2; commercial, 3; drawing, 1; English, 12; French, 8; general science, 7; history, 20; home economics, 5; Latin, 1; mathematics, 7; physics, 3; Spanish, 6. This unequal distribution makes a very serious vocational guidance problem both for the University and for the State. From the standpoint of the University and the State, the most important work of the year has been a systematic study of supervision. This was carried on by three correlated movements. First, there was a reorganization of the teachers' courses. These courses were conducted by the supervisors at the University on Tuesdays and Thursdays. Second, Monday conferences were given by the supervisors in which the ideals and objectives of secondary education in general and of the school in particular were discussed and formulated. The third factor was the publication of the *University High School Journal*. In general this exhibits the results of the two former movements.

It will be of service to the State and especially to the new teachers, in setting forth the ideals and work of the University High School. A new feature of the University High School has been the organizing of student activities. Thirty-five or more organizations have given opportunity for the development of leadership. The splendid professional spirit that is growing up within the University High School, together with sufficient funds to organize the departments, gives promise of increasing its service to the State.

The outlook is decidedly encouraging. The School of Education is in a better position now to move rapidly forward than at any time since its establishment in 1914.

English.—At a conference held last autumn between members of the department and the President, the Dean of the Graduate School, and the Dean of the College of Letters and Science, these administrative officers emphasized the need for a more organic scheme of studies, which should provide for students of English a more definite sequence of courses, and for students generally an ampler opportunity to become acquainted with the classics of English literature. The freshman courses (1X and 1A-1B) are to be taught in sections of about 200 students each, and, so far as possible, by teachers of professorial rank, assisted by readers. Certain sophomore courses are to be introduced, one by Dr. R. P. Utter, Associate Professor of English, in types of literature; another in composition by Dr. B. H. Lehman, Assistant Professor of English; still another in biography by Mr. Montgomery, Instructor in English. From these courses, together with Professor Kurtz' *Introduction to Poetry*, six units over and above the six units from English 1 must be chosen by the English major, as pre-requisite to advanced courses. These advanced courses will be of two kinds: (1) broad year-courses open to students in general, as well as to English majors; (2) semester-courses primarily for English majors. Of the latter, those primarily for juniors will be limited to 40 students each, those primarily for seniors, to 25, or possibly 20, students each, and conducted as pro-seminars. In every group, courses will be alternated through a two-year period, that they may be available to as many students as practicable. In the graduate list the seminars have been divided into: (1) seminars for prospective teachers, and (2) seminars for prospective masters or doctors. Besides these improvements we have endorsed a plan for the beginning of a department of comparative literature, of which Professor Lehman has been given tentative charge.

Aside from economizing our resources, the purpose of the department's reorganization has been to encourage research. To this end an English conference has been conducted fortnightly at which instructors and graduate students have presented papers, two of these papers being chapters from incipient doctorate theses. Six members of the department read papers at the annual meeting of the Philological Association of the Pacific Coast. Dr. A. C. Brodeur, Assistant Professor of English, presented a paper before the Modern Language Association, in the eastern states. Mr. Montgomery and Mrs. Tinkelpaugh were granted the Ph.D. at Commencement. Dr. C. M. Gayley, Professor of the English Language and Literature, was invited to give the annual research lecture, on the eve of Charter Day. He also delivered the Turnbull Lectures in Poetry at Johns Hopkins University, during the month of April, his subject being *Contemporary English Poetry*.

During the winter S. J. Hume, Assistant Professor of Dramatic Literature and Art, presented two notable dramatic series: one, consisting of modern plays, was given in Wheeler Hall Auditorium; the other, mainly Shakespearian, was given in the Greek Theatre, with sumptuous settings especially designed. The department has continued its public readings during both semesters.

The personnel has been somewhat modified: Dr. H. E. Cory, Assistant Professor of English, has resigned. Assistant Professor Brodeur, who has been on leave in the second semester, has been granted an extension that he might accept a fellowship on the Scandinavian Foundation and spend a year of study in Norway and Sweden. Leonard Bacon, Assistant Professor of English, and Dr. B. P. Kurtz, Professor of English, each have been given a full year's leave, and a semester's leave has been granted to Dr. Harold Bruce, Associate Professor of English. Dr. Willard Durham, now Assistant Professor of English in Yale, is to join the department as Associate Professor of English; Dr. Whipple, now at Princeton, becomes Assistant Professor of English here.

French.—At the opening of the first semester there had enrolled in lower division French courses some 1459 students, distributed as follows: French A, 572; French B, 189; French C, 383; French D, 141; French 5, 140; and French 6, 34. Most of the sections in the Lower Division exceeded the number that can be satisfactorily taught at one time (about 25 as a maximum). Graduate courses were well attended.

The Department of French would gladly increase its efficiency by having on its staff a somewhat larger proportion of thoroughly trained men. This would give a more scholarly tone to the work in the Lower Division; and would enable it to divide into sections two or three overcrowded courses in the Upper Division.

A course in scientific readings was conducted this year with marked success. This type of work attracts a goodly number of men who, in all probability, would not otherwise continue the study of French.

Because a good many graduate students are unlikely to carry their work in French forward once they have their teacher's certificate or Master's Degree, it is impossible to state precisely how many are truly pursuing graduate studies in French with scholarly purposes in mind. The Department of French, however, should give no fewer than six purely graduate courses, totaling not less than nineteen hours of seminar work.

Good though the general library collection in the field of French literature is, some of the most important authors are represented by inferior editions, or not at all. Without special gifts, it will take a long time to fill some of the gaps.

On December 9, 1920, the Consul General of France at San Francisco came to Berkeley and in the Library of French Thought conferred the Cross of the *Legion d'Honneur* on President David P. Barrows and R. T. Holbrook, Professor of French.

The annual Phi Beta Kappa address was delivered May 10 by R. Michaud, Professor of French, who spoke on *The Student and the Scholar*. In January, 1921, a brief leave of absence enabled Professor Michaud to lecture in the northwest (Seattle, Spokane, and Victoria, B. C.). In March and April he delivered at the University a series of six public lectures on *The Poets of Today*.

Under the presidency of Professor Michaud and the vice-presidency of Dr. P. B. Fay, Assistant Professor of French, the Association of

Teachers of French met once a month at the Public Library of San Francisco. These meetings helped (and help) to create and maintain useful relations.

In May, Dr. L. M. Turner, Associate Professor of French, took to France and Italy ("Collegiate Tours") a party of some ten students who attended lectures at the University of Paris and at the University of Bordeaux.

The Department of French would like to have two or more public lectures given every year under its auspices by some notable outsider. In 1920-21 this was not feasible, but on April 19 the department invited the public to "An Evening of French Music," presented by some seven skilled musicians.

The following were added to the staff of the department during the year: Mlle. Marie Champy; Mlle. Huliette L'Hostis; Raymond Sciobereti; C. Bissell; Dr. E. Vuylsketer; and J. G. C. LeClercq.

Dr. J. T. Clark, Assistant Professor of French, was absent on leave throughout the year.

Geography.—The enrollment in lower division courses in geography for 1919-20 was 752; for the past year it was 1091, an increase of 45 per cent. In 1919-20 there were 510 students in the course prescribed for the College of Commerce; in 1920-21 there were 622, an increase of 22 per cent. In the general lower division courses not prescribed by any other department, there were 242 students in 1919-20 and 447 in 1920-21, an increase of 84 per cent. This would indicate a greater increase in purely optional lower division geography than in that prescribed by the rapidly growing College of Commerce.

With the small teaching staff of the department it is impossible to take proper care of 1100 lower division students, and at the same time to offer a sufficient number of upper division courses to constitute a satisfactory major. This year, at the suggestion of the Dean of the College of Letters and Science, some of the upper division courses have been omitted and others are being offered every other year. The result has been helpful both to the lower division work and to research studies. The total number of upper division students has decreased from 93 to 77, although for the courses actually given there has been an increase of 5 per cent.

The general growing interest in geography as a part of the college curriculum is evident here, but unless additions to the teaching staff can be made it will be impossible to meet this interest with the number of major courses necessary to proper freedom of choice by the student. The reports at the Chicago meeting of the Association of American Geographers showed that today there is a much greater demand by the colleges for trained instructors in geography than the few universities giving satisfactory graduate work in the subject can supply. Several institutions reported at Chicago that large business corporations, especially those interested in foreign trade, were engaging many college instructors in geography, as well as some of the best graduate students, and that such demands are apparently growing in number.

As soon as financial conditions will permit, the department believes that a man of professorial rank, thoroughly trained in modern geography, should be added to the permanent staff of the department. A lectureship on the geography of foreign countries is also needed. To this lectureship should be invited from year to year the man best qualified by study and

by personal observation to discuss the physical, economic, and human factors influencing the life of special countries or regions.

The research work of the department is being continued on the two problems which were in hand last year. R. S. Holway, Professor of Physical Geography, is working on the character and extent of recent earth movements in the Coast Ranges as indicated by certain topographic features. In connection with this problem considerable data must be accumulated before any important conclusions can be reached. The Association of American Geographers has asked for a preliminary report of this investigation to be published in the Annals of the present year. B. M. Varney, Instructor in Meteorology, is working on the variability of precipitation in California. Short papers in connection with various features of this problem are being published in the Monthly Weather Review as the work progresses.

Geology and Mineralogy.—The greatest change in the Department of Geology for the academic year 1920-21 was the loss of Dr. J. C. Merriam, Professor of Geology, in consequence of his acceptance of the presidency of the Carnegie Institution of Washington. His place is being filled by the addition of J. P. Buwalda, Associate Professor of Geology. Professor Buwalda comes from Yale University. His familiarity with the geology of the West Coast and the interior basins together with his enthusiasm for geology will greatly strengthen the department.

The departments of Geology, Mineralogy and Paleontology have been consolidated into the Department of Geological Sciences.

There has been a great increase in the number of students of the Upper Division. Due to this increase there is a great overcrowding of the class rooms, the space in Bacon Hall now being entirely inadequate to house the department.

At present the department staff is inadequate to handle the increasing number of sections without resorting to the employment of inexperienced assistants.

The department was weakened by the appointment of Dr. G. D. Louderback, Professor of Geology, as Dean of the College of Letters and Science. Professor Louderback cannot devote as much time and energy to the department work as heretofore.

This year has seen the increase of manuscripts embodying the results of geological investigations in excess of the capacity of the University to publish them.

German.—The enrollment in the courses in German is continuing to make a gratifying recovery from the effects of the war. The lack of German instruction in the high schools throws the preponderance of enrollment into the lower division courses, but the rapid increase in the number of beginners promises a strengthening of the Upper Division in the near future. The figures for the last two years are: beginners in August, 143:243; new beginners in January, 88:129; Lower Division in August, 262:422, in January, 283:457; total enrollment in August, 373:538, in January, 395:566.

The department has been grievously hampered in its research work by the lack of books and periodicals published in Germany during the last five years. Difficulties of transportation still delay the filling of this gap in the library. L. M. Price, Assistant Professor of German, supplemented his *Bibliography of English-German Literary Influences* with a voluminous summary of the present state of investigation in that field.

Dr. C. H. Bell, Instructor in German, is revising his monograph on the survivals of matriliney in the medieval German epics; Dr. F. Schneider, Instructor in German, is continuing his inquiry into the influence of the German romanticists, and in particular of Heine, upon the poetry of Beequer; and Mr. E. G. Gudde, Assistant in German, is completing an investigation of the history and development of Freiligrath's political poems.

In the Germanic seminar conducted by Dr. H. K. Schilling, Professor of the German Language and Literature, two pieces of research are nearing completion: the evolution of feminism has been traced in the writings of German women novelists from the beginning of the nineteenth century; and the origin of the modern German form of the future tense has been practically determined by an exhaustive search of the literature of the Alemannic dialect from its beginnings to the end of the middle ages.

Greek.—The Department of Greek was honored, during the second half-year, by the presence of Dr. John A. Scott as Sather Professor of Classical Literature. Dr. Scott is Professor of Greek in Northwestern University and one of the recognized leaders of the world in Homeric study at the present time. His lectures on *The Unity of Homer* were delivered to large and appreciative audiences on the Wednesday evenings of March and April, and will shortly be published in book form by the University Press. They will undoubtedly be received throughout the world as an authoritative presentation of the arguments which may be adduced in support of the belief in the single authorship of the Iliad and the Odyssey, and will greatly reinforce the position of the growing school of Unitarians.

The department has recognized for some time the fact that very few of the many freshmen who enter the University every year have ever had their attention called to the very great importance of the Hellenic civilization in human history. In order partially to meet this situation, the department has instituted a new course, *The Greek Heritage*. This course is primarily for freshmen, and is intended to serve as an introduction to Greek studies. No knowledge of the language is required; but the students' attention is directed to the several avenues by which a knowledge of Greek civilization may be sought—language, literature, philosophy, politics, sculpture, and architecture. The course has met with gratifying response, and it is hoped that it will continue to prove useful.

The generous annual allowance from the Sather Bequest for the purchase of books in the field of Greek studies for the University Library has made possible important additions to the Library collections, and a large number of orders is still outstanding.

G. M. Calhoun, Associate Professor of Greek, in a paper entitled *Oral and Written Pleading in Athenian Courts* (Transactions of the American Philological Association, vol. 50, 1919), has announced the discovery that the filing of written pleadings was not required in the courts of Athens until after 380 B.C. and suggested the probability that there was a general revision of the judicial system in 378 B.C.

History.—The enrollment in the Department of History was larger than that of last year, a slight decrease in the Lower Division being more than counterbalanced by the increase in the Upper Division. The work of the Lower Division was strengthened by improvements in organization and equipment; by more rigid requirements; and by an excellent corps

of assistants, all graduate students of advanced standing. The library facilities are inadequate for work in the Upper Division. Additions to the teaching force are needed to provide new courses and to improve those already being given.

During the year two members of the department were absent on leave. Dr. W. A. Morris, Associate Professor of English History, spent the year in Europe; and Dr. C. E. Chapman, Associate Professor of Latin-American and Californian History, remained in Chile during the fall semester as exchange professor at the University of Santiago, returning in January, 1921. In his place Professor Raul Ramírez came as exchange professor from Chile. Professor E. D. Adams, of Stanford University, served as Lecturer on Modern History.

In addition to their regular duties at the University, several members of the department performed noteworthy services of interest to the profession at large. Dr. L. J. Pactow, Professor of Medieval History, in December, 1920, read a paper before the American Historical Association at Washington, D.C., on *Latin as an International Language in the Middle Ages*, and spoke before the American Philological Association at Baltimore on *The Revival of Latin as an International Language*. He was appointed a member of a committee of that Association to study the question of an international auxiliary language.

Professor Morris, from September 1 to April 15 devoted his time chiefly to research at London in the British Museum and in the Public Record Office. He also delivered two series of lectures, three at Smithfield College, University of London, and six, on *Kingship and Curia Regis*, at Kings College, University of London. After April 15 Professor Morris traveled on the Continent.

Professor Chapman, while in Chile, lectured on American history and institutions and gave a research course based on the colonial archives at Santiago. Since his return he has completed his *History of California under Spain*, now in the press of Macmillan Company. He continues to serve as one of the editors of the *Hispanic American Historical Review*.

Dr. H. I. Priestley, Associate Professor of Mexican History and Librarian of the Bancroft Library, published several articles and book reviews on Spanish-American History. His major research has been concerned with the agrarian problems of Mexico. A part of the summer of 1921 he spent in Mexico engaged in research and gathering materials for the Bancroft Library.

In the absence of Professor Morris, Dr. J. J. Van Nostrand, Assistant Professor of Ancient History, served as Secretary of the Pacific Coast Branch of the American Historical Association and as Secretary of the department.

Dr. H. E. Bolton, Professor of History and Curator of the Bancroft Library, in December and January, delivered eight lectures at Lowell Institute, Boston, on *The Growth of Spanish Power in North America, 1492-1821*. In January he completed his fourth year on the Executive Council of the American Historical Association. In October his book on the *Colonization of North America* (with T. M. Marshall) was published by Macmillan.

Volumes XI and XII of the *Publications in History* are nearly through the University Press. During the year five graduates have held travelling fellowships in Europe, namely, Arthur S. Aiton, John Lloyd Mechem, Arthur W. Watts, Doris W. Bepler, and Nancy Yerkes. Since last year's report was made, men recently trained in our history seminars have been

called to important positions in the faculties of the Universities of Michigan, Chicago, Texas, New Mexico, and Colorado, and to Washington University (St. Louis).

The two Native Sons Fellowships in Pacific Coast History, maintained by the Native Sons of the Golden West through an annual endowment of \$1500 each, were held last year by John Lloyd Mecham and Arthur S. Aiton, who returned in June from a successful year of study in the archives of Spain, France, and England. Mr. Aiton has been appointed Instructor in History in the University of Michigan and Mr. Mecham in Washington University, St. Louis.

Native Sons Fellows have made highly valuable contributions to historical research and now occupy important positions in various universities and research institutions, and in foreign service, for which their work has especially fitted them.

Home Economics.—At the end of its first year as a separate department, the *Division of Household Art* reports 430 student enrollments for the fall and spring semester, of which number 372 were in household art courses and 158 in elementary and advanced design. Of the total enrollment, 253 were in upper division courses, 7 were graduate students, and the 170 remaining were lower division enrollments. Four students received honors at graduation, and two students received the master's degree. During the Summer Session of 1921 there were 252 enrollments.

The department suffered a great loss last summer through the illness and death of Lucy Scarborough Conant, Lecturer in Design and Household Art. Her place has been filled by Hope Mehldau Gladding, as Assistant Professor of Design and Household Art.

The household management course, which has not been given for two years past, was resumed this year with a more comprehensive scope than formerly. The textile course has developed greatly in scope and excellence in spite of very inadequate quarters.

Both teachers and students in the courses in clothing have made a real contribution this year to the establishment of better standards in dress on the campus by assisting the Associated Women Students in their "Better Clothing Standards Drive," and by enlisting the interest of a goodly number of women students, many of them not members of this department, in issuing a bulletin of information for incoming women students, regarding suitable and convenient wardrobes for this climate and for college life. Illustrated lectures were given on *Home-Made Color and Design in House Furnishing* before the Housewives Leagues of Berkeley and San Francisco, and on *Textile Manufacture and Tests* before women's clubs and the Business Men's Association. The American Home Economics Association again requested the departments coöperation in furthering better textile manufacture by continuing the statistical reports begun last year in that connection.

In response to a call from the State Board of Education for a State Art Conference to "promote a better understanding of the importance of art to industry, commerce, the home and the community," there was sent to the conference an interesting exhibition of student designs for cretonnes, printed silks, cottons and linens. There were also included in this exhibition hand-woven rugs, and other textiles for costumes or housing purposes, designed and executed by students. Another group of twenty-five designs for cretonnes, printed silks, and cotton was exhibited at the Art Alliance in New York last fall. One of these designs won honorable mention, a money prize, and a membership in the Art Alliance.

The group as a whole created favorable comment and attracted considerable attention. In February a loan exhibition of textiles was arranged by the faculty and students in Household Art and Design at Architecture Exhibition Hall. The aim of this exhibition was to illustrate the historic and artistic development of the textile art from primitive times to the present day, and to show examples of many different processes of textile decoration. Several talks were given during the exhibition and students served as docents for the visiting public. The custodian reported an attendance of 705.

At the close of the year there was an exhibition of student's work in the application of the theory of color and design to materials for clothing and interior decoration. All exhibits showed the results of library research and the study of design and of the history of costume and ornament in their application to modern uses. Stage settings and costume designs by graduate students were also exhibited.

Honor work included an interesting paper on the printed decoration of fabrics and the influences which have played a part in their design illustrated with photographs of famous types; a paper on Chinese design in metal-work and jewelry; a study of interior decoration to be organized for use as a course of instruction suitable for county demonstration agents in household economics. One piece of graduate study included the classification and testing of a collection of examples of standard materials in modern use, as illustrative materials for use in the department.

Two master's theses were written and fully illustrated with original figure drawings, settings and properties, in black and white and in color. These studies were undertaken in answer to many demands for guides for stage settings and costumes for school and college plays.

In the *Division of Household Science* there were 162 registrations, 34 of which were in graduate courses. The drop in these figures as compared with those of 1919-1920, is due to the withdrawal of the Lower Division course 1A-1B. The registration in major courses maintained a nearly constant level, while the number of graduates registered considerably increased.

It has seemed best to offer again during the coming year the Lower Division elective course, 1A-1B, *The Food Problem*, dropped from the announcement during the past year. Without this course major students have no contact with the work of the department during their first two years. This seems to affect unfavorably the number of major students. Furthermore, the so-called practical work in food handling which is apparently a necessity in the training of teachers, can be introduced in such a course. Finally, students who do not intend to major in household science are offered in this course some scientific training through applications of chemical and physical principles to food problems, and some practical instruction in the solution of these problems.

A course in *Hospital and Public Health Laboratory Technique* was offered for the first time during the last year. Four students were registered for this work, and were placed in hospital and physicians' laboratories at the end of the year. A larger number of requests for technicians was received than could be filled.

A practical laboratory course, *Technique of Food Preparation*, was, during the past year, added to the graduate year requirements for the high school teachers' recommendation in household science. This seems to fill the need for drill in cookery and meal service which some students have not heretofore had an opportunity to obtain.

The *Survey of Home Economics in California Secondary Schools* begun in the spring of 1920 was finished in the winter of 1921. These findings will be a distinct contribution of the University of California in the training of teachers of home economics. The complete report of the survey is to appear in an early number of the school review.

Progress was made by Dr. Ruth Okey, Assistant Professor of Household Science, upon the following problems of research: changes in metabolism of women with the menstrual cycle; sugar tolerance and blood calcium. Professor Morgan has conducted studies in fat-soluble vitamin content of skim milk, and in feeding with albinomice. The department of Pediatrics of the Medical School has asked for the coöperation of this department in an investigation of the relation between diet and the causation of rickets. For this study, more animal rooms are essential. The University Infirmary has asked for similar coöperation in a study of the basal metabolism in goiter. For this purpose a Benedict respiration apparatus is necessary. The same apparatus is needed for the pursuit of the already adopted plan of investigation of the peculiar metabolism of women. These needs are pressing, since the number of research students is increasing, and the interest and desire of the staff for opportunity to do research is yearly more evident.

The housing of the department is at present inadequate for the proper administration of both teaching and research. An urgent need is felt for a well equipped kitchen laboratory for food handling; for a diet kitchen, metabolism laboratory, and small dining room *en suite*; for a respiration apparatus, polarimeter, refractometer, and platinum ware; and for animal housing.

Hygiene.—The Department of Hygiene has continued to give the prescribed courses in personal hygiene for men and for women. The great increase in the number of students has necessitated the division of the classes and the repetition of the lectures. The attendance on the popular courses has been very large. Elementary epidemiology has been recommended for students majoring in social economics and in physical education. Industrial hygiene has been opened to sophomores and recommended by the College of Commerce. The Department of Education has recommended child hygiene for students intending to become teachers. The responsibility of the department has increased accordingly as these new groups of students have been added.

Two new courses have been added in the Upper Division for students in the Curriculum in Public Health. These courses, *Public Health Administration* and *Vital Statistics*, should furnish the student with an appreciation of the value of organization in public health administration and the knowledge of methods to be used in administrative work.

In January the Curriculum in Public Health Nursing was transferred from the School of Nursing, of the Medical School and Hospital in San Francisco, to the Department of Hygiene.

Students in the laboratory courses in public health will now be able to have several weeks of supervised field work in the laboratory of the State Bureau of Communicable Diseases. The department has desired such a coöperative plan for supervised practice work for many years, and it is hoped that in the future it will be possible to require volunteer work in various public health institutions, during the summer vacation, as part of the Curriculum in Public Health.

Members of the department have undertaken several problems in research in the past year. Dr. R. T. Legge, Professor of Hygiene and

University Physician, has investigated two problems submitted by California industries as to the cause and prevention of certain occupational dermatoses of the hands among packers using straw and handling dried figs. His report furnished a paper which was read before the California State Medical Society held May 12, 1921, at San Diego.

Under the direction of Dr. J. N. Force, Associate Professor of Epidemiology, experiments have been performed to determine the practical value of a virulence test for diphtheria involving the use of intracutaneous injections of field cultures. Since January, the award of one hundred and fifty dollars from the Research Fund has made possible the continuation of the problem. It has been determined that the use of intracutaneous injections of field cultures is possible, and that the test is as accurate as, and more economical of time and materials than, the subcutaneous test in general use. Tests have been performed over the period of a year so that any seasonal variation in nose and throat flora has been included. At the same time data concerning the relation of virulence to the type of contact and the carrier state have been accumulated and are to be published in a series of articles.

The department finds it impossible to retain students for graduate work in research. Positions open to students after graduation are so attractive, and the desire to earn so insistent, that students do not wish to stay for graduate work. The department should provide research fellowships which would insure students for research who could also assist in undergraduate instruction.

Since January, Dr. Force has been on sabbatical leave and has been working as special expert in the Hygienic Laboratory of the United States Public Health Service in Washington. He has been doing research to determine a practical potency test for smallpox vaccine virus.

Through Dr. Legge's membership on the Alameda County Institutions Commission, it has been possible to further coöperation with various public health institutions, and to provide field work and materials for study for students in this and other departments in the University.

Dr. Legge received from the Auxiliary Red Cross Chapter of the University, the sum of \$400 for the purchase of much needed office apparatus to conduct special work in public health nursing courses.

Irrigation.—During the last year the most marked development has been in the strengthening of the main course for students from the College of Agriculture. The large enrollment in this course has required that it be offered in three sections during one term and repeated in one section for the other term. The rapid development in this phase of irrigation has been met by the preparation of extensive mimeographed notes for distribution to the students as a supplement to the text book.

Instruction in the other phases of irrigation has continued to develop. In recent years there has been a considerable demand for instruction to graduate students from other states and from foreign countries. Accordingly, graduate courses, together with seminar and thesis work, have been an important part of the work of the department. Graduate work has been strengthened by the accumulation in the departmental library of valuable literature from foreign countries and of plans from a large number of irrigation projects.

During the past year S. T. Harding, Professor of Irrigation Engineering, carried on extensive investigations in the development and complete utilization of the Kern River for irrigation. This work was done for the State Engineering Department and his report will be published this summer.

The enrollment in the irrigation courses is largely dependent on the number of upper division and graduate students in the Colleges of Civil Engineering and Agriculture. The enrollment, which was materially decreased during the war period, was greatly increased during the past year, and it is anticipated that the increase will continue, especially since there are large irrigation projects which will develop when financial conditions have improved sufficiently to make their construction possible.

The Department of Irrigation is housed in the attic of Agriculture Hall, where it occupies one office room and part of a drafting room, shared with the Division of Landscape Gardening. These accommodations are barely adequate, and it is believed that future growth will require additional room space.

Italian.—The urgent need of the Department of Italian continues to be a substantial addition to the upper ranks of the teaching staff. The need of the department is not only for a scholar of repute and a good teacher who can conduct Upper Division and graduate classes, but also for a man who can coördinate such work with that done in French and Spanish. Miss Maria Tommasini, Associate in Italian, has done the routine tasks of the Lower Division with great success.

There is an active Italian Club for all interested in the culture of Italy.

The department was fortunate in securing for one semester the services of Raffaello Piccoli, an Italian scholar and lecturer of high repute, who as Lecturer in Italian Literature and Institutions, had charge of all work in the Upper Division.

Jurisprudence.—The enrollment in the School of Jurisprudence during 1920-21 reached a total of 285 students. Of this number, 181 were pursuing the three-year curriculum, and 104 the four-year curriculum. Fifteen were special students, not candidates for a degree. The exigencies of the war seem to have called for a relaxation of our strict requirements to the extent of affording an opportunity for a professional preparation to especially deserving men as special students. Of the total number of students 115 were college graduates, representing 17 different colleges. The J.D. degree was granted to 36 candidates. It should be noted that the law faculty gave instruction in various courses outside the law school. These courses include *Commercial Law*, *International Law*, *Legal History*, *Maritime Law*, *Roman Law*, and *School Legislation in California*. In 1920-21 there were 1786 students registered in these academic courses.

Dr. Matthew C. Lynch, Professor of Law, was on leave of absence during the year. His place was partially filled by the appointment of Dr. Matt Wahrhaftig, as Lecturer in Law; and Dr. William Warren Ferrier, during the second half-year, as Lecturer in Law.

During the Summer Session of 1920, Francis H. Bohlen, Algernon Sidney Biddle, Professor of Law in the University of Pennsylvania, gave the course in torts. In the Summer Session of 1921, Samuel Williston, Weld Professor of Law in Harvard University, gave the course in contracts. Orrin K. McMurray, Professor of Law, accepted an invitation from the University of Michigan, and gave the course, *Conflict of Laws*, at Ann Arbor during the summer of 1920. William Carey Jones, Professor of Jurisprudence and Director of the School of Jurisprudence, represented the University at the one hundredth anniversary of Harvard Law School in June, 1920.

The law library has been the recipient since 1916, through the generosity of Mr. Justice Shaw, of complete files of the records of the California Supreme Court and of the District Courts of Appeal. Through the generosity of Judge William W. Morrow, the library has received a complete file of the records in the Circuit Court of Appeals in the Ninth Circuit. These briefs and transcripts are of the greatest value, especially to persons preparing notes and papers for publication in the California Law Review.

The California Law Review, under the joint editorship and management of the faculty and students of the law school, has continued to prosper and develop in a highly satisfactory manner. It is a coveted honor to be elected to the board of student editors, election being based on service and a distinguished law school record.

The law library has grown steadily. It contains now some 35,000 volumes, all being books of essential value. The care and development of the law library are in charge of Miss Rosamond Parma.

Boalt Hall of Law has been completely outgrown. The reading-room has a seating capacity of 96. The number that has occasion to use it is over 300. Lecture-rooms designed to accommodate from 50 to 75 students are crowded to twice their intended capacity, chairs filling every available space, and students even sitting in the window sills. Likewise the stack-room for books is now almost completely occupied. An additional building is an imperative and immediate need.

Latin.—During the past year, members of the department gave two series of public lectures on the general subject, *Our Roman Heritage*, at the San Francisco Public Library; the lecturers were L. J. Richardson, Professor of Latin; Dr. Clifton Price, Associate Professor of Latin; O. M. Washburn, Associate Professor of Classical Archaeology; Dr. M. E. Deutsch, Associate Professor of Latin; and Dr. Torsten Petersson, Assistant Professor of Latin.

Professor Petersson organized a course, *The Roman Heritage*, which was given during the first term at the University. The course is intended as a brief account of Roman civilization and of its place in the history of Europe; no knowledge of a foreign language is required. Ninety-six students were enrolled in this course.

Professor George L. Hendrickson of Yale University has been appointed Sather Professor of Classical Literature for the year 1921-22, and will be in residence during the second half-year. He will give a series of lectures on *Roman Satire*, which subsequently will be published by the University.

For the Richardson Latin Translation Prize there were nine contestants. Nine students also received the degree of Master of Arts with Latin as a major in May, 1921.

With the coöperation of the department, Pi Sigma, an honor society for students of high scholarship concentrating on Latin, was organized.

Professor Deutsch resigned the position of Dean of the Summer Session in Los Angeles. Professors Richardson and Washburn continue to discharge important administrative duties, the former as Director of the University Extension Division, the latter as Manager of the University Press.

In the field of research, Dr. W. A. Merrill, Professor of the Latin Language and Literature, has completed two studies: one on *Statius Silvae, Book V*; the other on *Lucretius and Cicero's Poetry*. Both are

awaiting publication. He has also in progress a study of the Lucretian hexameter; this work will probably take several years and is intended to be definitive.

Dr. H. C. Nutting, Associate Professor of Latin, has translated Pierino Belli's *De Re Militari et de Bello* for the series on international law published by the Carnegie Endowment, and it is awaiting publication. He has also completed a long study of the conditional clause of comparison. Other articles completed deal with interpretations of Horace and of Virgil; one paper treats of Catilines conspiracy; another, *Stress as a Defining Element*. Appearing in the *Classical Journal* is *Ad Alpes*, a Latin narrative with a background of ancient life.

Professor Deutsch has resumed his studies in the life of Caesar and, in particular, in Suetonius' *Divus Iulius*; he has one article in press, and a second completed.

Professor Petersson's *Cicero: a Biography* was published during the year by the University of California Press. It is a work of 699 pages, and is one of the Semicentennial Publications of the University. It has received many favorable reviews.

Mathematics.—The department has been much embarrassed by the increase in number of students without a corresponding increase in the number of teachers. In spite of the abolishment of prescribed mathematics in the College of Letters and Science, the enrollment in the first half of the year amounted to 2413. These were distributed in 59 sections, totalling 185 hours of instruction, the average enrollment in the Lower Division being 51. In the second half-year, the enrollment was reduced to 1813, distributed in 55 sections, again totalling 185 hours of instruction, the average enrollment in the Lower Division being 42. This is still much too large for such courses as those offered in the Colleges of Engineering and of Commerce, which occupy about half of the time of the department.

Of the permanent staff, Dr. T. Buck, Assistant Professor of Mathematics, has been on leave of absence for the year, which he spent in study in Europe, mainly in Paris. Dr. J. H. McDonald, Associate Professor of Mathematics, resigned in September to accept a professorship in the University of Toronto, but fortunately returned in January.

The staff was increased by the appointment as instructors of A. R. Williams and C. D. Shane, two of our own Doctors of Philosophy, who had previously held teaching positions in the department, and during the war were in charge of schools of the United States Shipping Board.

The department is greatly indebted to Professor B. W. Woods for kind assistance in taking over a section of juniors in mechanics, ordinarily conducted by Professor Buck.

Three distinguished students of mathematics have this year been advanced to the degree of Doctor of Philosophy. Of these, D. V. Steed has been appointed Assistant Professor at the University of Southern California; Miss N. M. Alderton, Instructor at Mills College; and P. H. Daus, Instructor in the University of California, in place of Dr. F. R. Morris, who resigns to take charge of the department of mathematics in the Fresno Junior College.

The entire department is earnest in its prosecution of research in various directions. For some thirty years it has had regular meetings at least once in two weeks at which the various members of the staff present the results of their investigation. The San Francisco section of the American Mathematical Society meets twice a year, and the depart-

ment has always been represented, on the average, by five or six papers. During the current year, the principal results are here summarized:

M. W. Haskell, Professor of Mathematics, has read two papers on antipolar curves and surfaces at the meetings of the San Francisco section of the American Mathematical Society. These with other (mainly unpublished) investigations extending over a number of years, will be included in a treatise on higher geometry which it is hoped will be ready for the press within a year.

Florian Cajori, Professor of the History of Mathematics, has completed his biography of F. R. Hassler, the first superintendent of the United States Coast and Geodetic Survey. This has been in the hands of the Committee on Publications for nearly a year. He is now engaged in the preparation of a history of algebraic notations, and has published during the year some twelve articles on various topics in the history of mathematics in *Isis*, *Science*, the *Scientific Monthly*, the *Bulletin of the American Mathematical Society*, the *American Mathematical Monthly*, the *Mathematics Teacher*, and *School Science and Mathematics*.

D. N. Lehmer, Professor of Mathematics, has continued his investigations in the theory of numbers, having published several reviews in the *Bulletin of the American Mathematical Society*, and a popular article, *The Theory of Numbers*, in the *Youth's Companion*. A memoir on *Ternary and Higher Continued Fractions* is to appear shortly in the *American Journal of Mathematics*, and a paper on the computation of interest on investments in the *American Journal of Accountancy*. A paper on the *Classification of Hyperquadric Surfaces in Space of Four Dimensions* is nearly ready for publication.

J. H. McDonald, Associate Professor of Mathematics, has published papers on the *Roots of Bessel's Functions* and on the *Porism of Four Tangents to a Twisted Cubic* in the *Proceedings of the National Academy of Science*, and a paper on the *Transportation of Elliptic Integrals* in the *Bulletin of the American Mathematical Society*.

C. A. Noble, Professor of Mathematics, has published a note on the *Solution of Fractional Equations* in the *American Mathematical Monthly*.

B. A. Bernstein, Assistant Professor of Mathematics, has been occupied with the elaboration of his lectures on the *Theory of Probability*.

C. D. Shane, Instructor in Mathematics, has published an article on the *Spectra of Certain Class N Stars* in the *Lick Observatory Bulletin*, No. 329.

Mechanical and Electrical Engineering.—The past year has seen the cessation of the work undertaken by this department in the United States Shipping Board School. The course given in this school was of approximately four weeks duration and has been in continuous operation since May 20, 1918. D. W. Dickie, Lecturer in Marine Engineering and Naval Architecture, A. B. Domonoske, Assistant Professor of Mechanical Engineering, and Mr. I. M. Scott, Jr., have been largely responsible for the high character of the instruction given, and for the satisfactory relations maintained with the governmental agencies concerned. A total of 622 students attended the school, of whom 470 completed the course which was intended to prepare them for passing the examination for licensed engineers given by the United States Supervising Inspectors.

A complete reorganization of the shops is now in progress in order that they may conform more closely to the changes in industrial organization, and also to the practice of the better institutions east of the Rockies. Both wood and iron working shops are now under the supervision of A. B. Domonoske, Assistant Professor of Mechanical Engineer-

ing. From now on the shops will be used as laboratories to illustrate the problems of shop managements as well as those incidental to the practical working of materials of construction.

Continuous development of the mechanical and electrical laboratories has been interrupted during the last two years out of deference to the general University financial condition, and the request that all departments proceed with their work with the least possible expense. Accordingly there have been held in abeyance during this period, orders for new apparatus which amount to more than \$12,000 for the electrical laboratory and somewhat more than \$7,000 for the mechanical laboratory. This break in the normal growth of laboratory stations has resulted in a handicap which will require at least two years to overcome, and which is felt keenly this year, because of the large increase in the number of junior students.

The needs of the department for additional space are daily becoming more acute. It may be assumed that the junior and senior classes have now approximately reached the size which they are likely to attain for some time to come. They are so large that the class rooms of the Mechanics Building are too small for the sophomore and junior sections and are filled to capacity with the seniors. The Mechanics Annex, which was used primarily as an overflow building two years ago, and the Mining Building, serve for most of the classes of the department. Laboratory space has been utilized until the passageways left are almost unsafe for those who must move around in the building.

Much thought has been given to possible modes of enlargement of laboratory facilities. The plan which seems most feasible involves the construction of several parallel laboratories with concrete floors and with walls and roof of the usual manufacturing plant type. These could be built one at a time at relatively low cost and the portion of the building for administrative offices could be constructed last as a replacement of the present building. If one of the laboratory wings were constructed within the next few months, the improvement in the conditions could scarcely be over-estimated. One factor which commends this plan to earnest consideration is the possibility of developing it little by little as funds are available, without involving at any one time the expenditure of a large sum. This method of construction of engineering laboratories has been very satisfactory in many of the largest universities of the country.

Military Science and Tactics.—There has been no change in the organization of the Infantry Unit of the Reserve Officers' Training Corps during the year. In January, 1921, an Air Service Unit was organized and was maintained during the spring semester. Authority has been granted for the establishment of a Medical Corps Unit of the R.O.T.C., and it is planned to organize such a unit at the beginning of the next academic year.

The total enrollment of students in the department for the fall semester was 2123; for the spring semester, 1660. The minimum strength for the year of the Infantry Unit was 1508 on April 26, 1921; the strength of the Air Service Unit on that date was 61. Thus, the total number of students in the department at the close of the year was 1569, 126 less than the minimum strength for the preceding year.

The courses of instruction conformed as nearly as practicable to those prescribed in R. O. T. C. regulations for the two types of units maintained. During the summer of 1920 the University received from the

War Department 200 sets of infantry pack equipment, an automatic rifle, a machine gun, a one-pounder gun, and a trench mortar. Instruction in infantry pack equipment and the special weapons named was given to student companies by roster.

The University was again on the War Department's list of Distinguished Colleges for the year 1920. Bertram Pierre Puckett was designated as the "honor graduate" in May, 1920; and George Work Marvin as the "honor graduate" in December, 1920.

Twenty-one students of the University attended the 1920 R.O.T.C. Infantry Camp at Camp Kearny, California. Seventy-four students are planning to attend the 1921 Infantry R.O.T.C. Camp at Camp Lewis, Washington. This is a very gratifying increase in numbers. The students from this University made excellent records in the 1920 camp. The three "honor students" in the advanced course were from this University. In fact the five students receiving the highest rating in that course were from the University of California.

During the academic year officers of the Army were detailed as Assistant Professors of Military Science and Tactics at the University of California, and reported for duty on the dates noted, as follows:

Major Robert R. Welshimer, Coast Artillery, October 2, 1920; Captain Leonard R. Boyd, Infantry, October 3, 1920; Captain Paul E. Peabody, Infantry, October 20, 1920; Major William A. Robertson, Air Service, November 23, 1920; Major Harry G. Ford, Medical Corps, May 18, 1921. Major Welshimer was relieved from duty at the University of California November 2, 1920. The other officers named are still on duty in the department.

Mining and Metallurgy.—In spite of the fact that the mining industry throughout the world has been greatly curtailed, the student enrollment in the Department of Mining increased over that of preceding years, particularly in the petroleum engineering option. In several courses laboratory equipment has been sorely taxed.

Biweekly conferences of the members of the department are held, at which all matters pertaining to improvements in curriculum or equipment are freely discussed. Work is regulated by a shop order system, following requisition and specification, and detailed costs are kept. As a result of the much needed reassignment of floor space, each instructor now has ample store room, private research and student laboratories *en suite*, adjoining his own office. This arrangement has made it possible to provide the United States Bureau of Mines Experiment Station with more commodious quarters and to supply the District Mining Engineer of the United States Government with desirable offices and workshops. The Student's Mining Association now enjoys a large room on the basement floor. Generous donations from alumni of the college will make it possible suitably to furnish this room during the coming year.

The fire-assay laboratories are being remodeled, all the furnaces, coal and coke, oil, gas, and gasoline fired, are being installed in the smelting room, making it possible to expand the work in wet assaying and hydro metallurgy. The petroleum laboratory has received valuable additions to its equipment during the year and many interesting research problems are being worked out. The Lawson Adit has been improved by the addition of a "fan" house at the portal in which air receivers, centrifugal fans and small engine are installed. The department is now able to study the important question of mine ventilation more thoroughly, actually determining the variants under changing conditions.

About fifteen students received instruction in mine rescue and first aid, the Lawson Adit being filled with an irrespirable atmosphere, in which the crucial tests were made. These students have been awarded certificates by the U. S. Bureau of Mines.

Under the direction of W. S. Morley, Associate Professor of Metallurgy, a systematic study has been made of the floatative properties of pure base-metal sulphides—a continuation and elaboration of the investigations started in our laboratories during the war. E. A. Hersam, Associate Professor of Metallurgy, has supervised experimentation on the treatment of pregnant liquors from the leaching of copper ores. L. C. Uren, Associate Professor of Petroleum Engineering, has collaborated with senior and graduate students in solving a few of the pressing problems connected with petroleum technology. The distillation of oils from various shales has been effected and the products refined: similar work has been done on bituminous sands and lignite coals. Gratifying results have been obtained from further study of the use of cements and clays in sealing off porous strata from wells in the process of drilling. A preliminary investigation has been made of the absorptive capacity of various charcoals for hydro carbon gases, looking toward the extraction of gasoline from natural gas. The regeneration of spent lubricating oils and the filtration and decolorization of heavy oils is also receiving attention.

L. K. Freeman, Instructor in Mining, is now engaged in a study of the application of various cements to mine workings and of the effect they may have on the cost of support of excavations, the conservation of timber, and improvement of working conditions underground.

The U. S. Bureau of Mines maintains in the Hearst Memorial Mining Building two separate experiment stations. Dr. L. H. Duschak, as superintendent of the chemical and metallurgical station, reports in synoptic form the following researches completed during the fiscal year: (1) Investigation of the technology of caustic magnesia, done in coöperation with the North West Magnesite Company. Nearly \$50,000 was expended in the conduct of this work and our laboratories are enriched by the installation of permanent crushing and roasting devices, left there on the completion of the work. The results of the comprehensive research are that many of the California and western magnesites will yield a high grade caustic cement, utilizable for flooring, stucco, and other building purposes. Much valuable knowledge was gained as to the testing of caustic magnesia and the factors affecting its properties. (2) The purification of copper sulphate solutions, making it possible to produce high grade cathode copper. (3) The results of the exhaustive researches into the metallurgy of quicksilver have been compiled and assembled for publication. (4) Many minor chemical problems have been solved bearing on the larger scientific and economic questions of the mineral industry being studied in other of the Bureau of Mines stations.

Mr. Byron O. Pickard, Superintendent of the Berkeley Safety Station and District Mining Engineer of the United States Bureau of Mines, summarizes the activities of his station as follows: (1) A field investigation on metal mine ventilation, rock dust in relation to miner's pulmonary diseases, and high temperatures and humidity as affecting the health of miners, at Oatman, Arizona; Grass Valley, California; and on the Mother Lode. (2) A revision of California mine safety rules. (3) An investigation of mine fire hazards in California, Arizona, and Nevada. (4) Explosions in compressed air lines. (5) Several metal mine practices, e.g., sand filling of stopes, emergency fans for fires, skip changing devices,

etc. (6) The use of gunite in metal mines. (7) Instruction of 158 and 753 men in mine rescue and first aid work respectively. (8) Directed and assisted in the mine rescue of entombed miners at the Calaveras Copper Company's property, Copperopolis, September 29, 1920. The bodies of two miners lost in the fire were recovered and the fire controlled. (9) Fourteen technical papers were prepared and submitted for publication to the Washington and Pittsburgh offices of the Bureau. In addition to this Mr. Pickard has visited every operating mine and dredge within his territory and established relations leading to the closest co-operation between all concerned.

In January of this year a five day conference was held in the Hearst Memorial Mining Building attended by the Assistant Director Bureau of Mines, Supervisor of Experiment Stations, and Chief Clerk from Washington, D. C., the Superintendents of all the western stations of the Bureau of Mines, the Consulting Engineers of the Bureau, and the Deans of the several western mining colleges. Reports of progress of investigations were received and the full programme of research and activity outlined for the current year.

Music.—While the incomplete staff and equipment of the Department of Music prevent its services from being as efficient as its members desire, there has been a steady increase both in attendance and in the scholarly quality of work done by students.

Due to the generosity of a former student, Glen Haydon, M.A., who volunteered to give the freshman course in the history of music, it was possible to give attention, hitherto impossible, to this important subject.

The establishment of band courses upon a regular credit basis as courses in this department has proved to be an important addition to the musical life of the University. Such an addition has resulted in an excellent military band of full strength that will be able to add concert work to its repertoire next semester. Already it has greatly increased the interest in music on the part of the men students, and has provided valuable opportunities for prospective teachers in the high schools in the way of practical studies in the arrangement and direction of band music.

Similar experience of equal value has been obtained by the classes in composition and orchestration in the production of the music for this year's *Partheneia*.

Researches in the rich fields of the scientific basis of music and the problems of the teacher of music received their initial impulse this year at the hands of four candidates for the master's degree, who have contributed important material for musical scholarship of the more serviceable type.

Oriental Languages and Literature.—The total enrollment in all classes of the department during the academic year just closed was 673, duplications included.

The lecture courses were naturally much more largely attended than those in the languages, but the increased attendance upon the latter shows that the interest in the study of Chinese and Japanese is growing. The total enrollment, including duplications, in the language classes during the two semesters was 138, of which 50 were in Japanese and 88 in Chinese.

E. T. Williams, Agassiz Professor of Oriental Languages and Literature, had charge of a class in third year Mandarin, and gave two lecture courses; one on *Chinese History*; the other on *The Social and Economic*

Conditions in China. In addition to his work in the Oriental Department, Professor Williams has given courses in the Department of Political Science, conducting the class in Political Science 106, and a seminar upon *Political Conditions in the Far East*. The total enrollment in these two classes, not included in the statistics given above, was 101.

During the autumn and winter a course of ten lectures was given by Professor Williams under the auspices of the Mechanics Institute of San Francisco. Sixteen other lectures were given in various parts of the State.

At the request of a civic organization in San Diego, Professor Williams prepared last summer a paper on *Oriental Immigration and Citizenship*. This paper has been published in full by Dr. Walter B. Pitkin in his recent volume, *Must We Fight Japan?*

For the most part, however, Professor Williams' researches have been made in the field of Chinese history, with a view to the preparation of a *Students' History of China*. He hopes to have the volume ready for publication within another year.

Although the number of students enrolled in the language courses in Japanese is comparatively small, the desired results have been obtained. Most of the students who have completed one year's work of three hours per week can both speak and understand the Japanese language.

Y. S. Kuno, Assistant Professor of Japanese, has for some years investigated the curricula and methods of instruction of various schools and colleges in China and Japan. This investigation has led to a very general acceptance by the leading universities of the United States of his evaluation of these schools in determining the credit to be given Oriental students who have come to our country to continue their studies. A volume prepared by him, *A Classification of Schools in the Orient*, is about to be published. Professor Kuno also has the second volume of his *Japanese Text Book* nearly ready for the press.

Since October last Professor Kuno has published nine articles dealing with the question of Oriental immigration. These articles attracted considerable attention because of the revelations made in them, and because of the very fair treatment of the question.

T. H. Chen, Assistant in Chinese, had charge of the beginners' class in Chinese, and conducted a class in the study of Mencius. He has also given instruction in Mandarin to a class in San Francisco under supervision of the Extension Division. Dr. Chen has devoted much of his time to research in the history of Chinese economic thought, particularly in the ancient period.

Palaeontology.—The year 1919–1920 is the last year that the Department of Palaeontology is to be conducted as a separate department. The members of the department have felt that the teaching part of their work should be carried on in conjunction with the Department of Geology. A palaeontological museum has been organized which will be, in the future, a department by itself to be known as the Museum of Palaeontology. This change, made possible by the most generous gift of Miss Annie M. Alexander, gives larger facilities for research.

During the past year, Dr. Chester Stock, Assistant Professor of Palaeontology, has been working on several very important problems. He has continued his work on the monograph of the ground sloth, and it is expected that this very important piece of work will be finished shortly. During the last year he has made a number of trips to Los Angeles working on the fauna of Rancho La Brea in conjunction with Dr. J. C. Mer-

riam, President of the Carnegie Institution, Washington, D. C. During the month of March Dr. Stock went to Carson City and made a very careful study of the Pleistocene footprints at the State Penitentiary yards. Casts of these footprints were made for the Museum of History, Science and Art at Los Angeles, and for the University.

Besides his monograph on the ground sloths, Dr. Stock has several other papers in process or near completion, the most important of which is the discussion of the stratigraphy and fauna of the Meadow Valley Region, Nevada. He has also been working on a paper describing the geology and the fauna of the Tertiary in the region of Alturas, western Nevada, where he is to continue investigations this summer. Dr. Stock has been devoting part of his time to the vertebrate fauna obtained in the Marine Pleistocene of San Pedro. He has just completed a short paper entitled *Note on Hipparion from the Siesta Beds of the Berkeley Hills*. Another paper which is practically completed by Dr. Stock, in conjunction with Eustace L. Furlong, Assistant in Palaeontology, is entitled *A Marsupial from the John Day Oligocene of Logan Butte, Eastern Oregon*.

A paper on *The Taxidea of Rancho La Brea*, by Miss Florence Moses, is near completion.

Remington Kellogg, at the present time connected with the U. S. Biological Survey, is working on the fossil whale material of the West Coast, and has spent a good portion of his time during the Christmas holidays at Berkeley working on the material in the collections of the Department of Palaeontology.

An important recent discovery which it is believed will lead to valuable results was the discovery of fossil Amphibia and reptile remains in the "Petrified Forest" of Arizona. It is probable that research in this field now being conducted by Charles Camp, will be continued for a number of years. Miss Annie M. Alexander, who was one of the first to bring attention to this locality, is financing an expedition and intends to return to that field shortly in the interests of the University of California.

A number of problems have been undertaken by students in the Department of Palaeontology, several of which are now completed. Three important studies have been finished during this year: *Faunal and Stratigraphic Relations of the Empire Formation of Coos Bay, Oregon*, by H. V. Howe; *A Possible Division between the Cretaceous and the Jurassic in the Region north of Berkeley*, by L. W. Henry; and *A Study of the Briones Formation in the Region of San Francisco Bay*, by Parker Trask.

Several other problems are being studied by graduate students, the results of which promise to be of importance and will be published in the near future.

During the past year three papers have been finished by Dr. Bruce L. Clark, Assistant Professor of Palaeontology: *Stratigraphic and Faunal Relations of the Meganos Group of Middle Eocene, California*, in the *Journal of Geology*, Vol. 29, No. 2, 1921. Another paper which will appear soon is a study of the problems of the correlation of Marine West Coast under the title of *The Correlation of the Tertiary Marine Formations of the West Coast of North America*. A third paper, which it is hoped will be published shortly is entitled, *Summary of the Palaeogeography and Correlation of the Marine Tertiary Horizons of California*.

There are several faunal problems which are being carried on, one or two of which are near completion. A study of the fauna of the Sooke formation, Southern Vancouver Islands, which includes a description of a fairly large number of new species and the geology of that region will be published by Dr. Clark, in conjunction with Dr. Ralph Arnold.

A monograph on the Pelecypoda of the Marine Oligocene of the West Coast will be finished in the coming fall.

A monograph on the fauna of the Meganos Group in the Region of Mt. Diablo, Middle California, has been undertaken in conjunction with Professor A. O. Woodford of Pomona College. It is expected that in the coming year the results of several years field work in the region of Mt. Diablo will be brought together.

During the last year several field parties have been sent out by the University of California. Mr. Henry Howe went for Dr. Clark to Washington during the Christmas holidays and made a collection in the Lower Miocene of Southern Washington, and worked on the stratigraphic relations of deposits there.

Mr. Richard Nelson and Mr. Theodore Crook spent part of the Christmas vacation in conjunction with Dr. Clark, working on the Marine Eocene deposits in the vicinity of Simi Valley, Ventura County. Large collections were obtained and very important stratigraphic information.

Dr. Clark had opportunity during the Christmas vacation to attend the scientific meetings in Chicago, and from there went to Philadelphia to carry on some studies of fossil types in the Museum of the Philadelphia Academy of Sciences, and also spent a few days in the United States National Museum at Washington, working over some old collections that originally came from California and which contained some of the types of fossil species.

Philosophy and Psychology.—*Philosophy.* The Department of Philosophy has been reorganized this year in order that the two fields of philosophy and psychology might be more clearly marked off from each other. For all matters concerning curricula, supervision of majors, and guidance of candidates for higher degrees, the fields of philosophy and psychology practically constitute two separate departments. The division of these separate interests in the department gives formal expression to the actual practice which in recent years has been made necessary by the growth of divergent lines of activity in the two fields of philosophy and psychology, and is consonant with the general tendency of American universities to set up a department of psychology independent of philosophy.

The department has suffered a loss in the resignation of Dr. C. I. Lewis, Associate Professor of Philosophy, who has accepted an appointment at Harvard University. Dr. C. H. Rieber, Professor of Logic, was absent on leave during the second half-year, spending the time abroad. Dr. S. C. Pepper was appointed Instructor in Philosophy, and his course in aesthetics fills a need—increasingly felt in recent years—both in the department and in the University. He also gave with marked success the course in inductive logic in Professor Rieber's absence during the second semester.

A gratifying feature of the work of the department has been the growth of the two new lower division courses, the *Introduction to Philosophy* and the *History of Philosophy*. These two courses together have had an enrollment of more than 1000 students. The need of general courses, introducing elementary students to the history and the problems of philosophy, has always been widely felt and has now, in some measure, been met. Aside from offering general courses to a large body of undergraduates, the department is now able to offer a higher grade of work in the Upper Division, because students have had these elementary courses in the Lower Division and are consequently better prepared for advanced work.

Dr. J. Loewenberg, Assistant Professor of Philosophy, has continued his work upon the important and large collection of the Royce manuscripts which Mrs. Royce has loaned him, and which, since Professor Royce's death, have been deposited in the University Library. Two volumes have already appeared, viz.: *Lectures on Modern Idealism* (Yale University Press); and *Fugitive Essays* (Harvard University Press). Both volumes are included in the Semicentennial Publications of the University.

Dr. Pepper has nearly ready for publication a book on aesthetics.

Idealism and the Modern Age, by Dr. G. P. Adams, Professor of Philosophy, has appeared in a Japanese translation by Professor Anesaki of the Imperial University of Tokyo. Professor Adams has in preparation a series of studies in social philosophy, parts of which he will give as lectures at the Sorbonne University in Paris during his absence next year.

Psychology.—During the year the last class room in the former Philosophy Building has been converted into a laboratory and the building renamed Psychology. It is now necessary to conduct all lectures and recitations in rooms at a considerable distance from the laboratories and with inadequate facilities for demonstrations before classes. At the same time the increased number of students in laboratory classes leaves the Psychology Building still badly crowded. The students' honor society Tau Psi Epsilon, has taken charge of the reading room with its collection of reprints belonging to members of the staff, and has added to the collection of books. It appears that students profit greatly from the opportunities of such a reading room particularly while access to books is so difficult in the University Library. There has been a considerable increase during the year in the amount of Upper Division work and in the number of students showing themselves prepared and anxious to carry on research or investigation.

Dr. G. M. Stratton, Professor of Psychology, has continued his study of anger and pugnacity. With regard to the part played by these factors in morals and religion, materials have been gathered from religious literature and from the reports of the customs and mythology of backward peoples. Through aid from Beulah M. Morrison, Research Assistant, data on the importance of anger in animals have been obtained from a number of cattle men in California. Observations, mostly experimental, regarding the emotions have been systematically made upon animals and also upon human being, children and adults. There was studied experimentally, in collaboration with Dr. Warner Brown, Associate Professor of Psychology, and Dr. C. Tolman, Assistant Professor of Psychology, a person who could be controlled by another through exceedingly obscure signs. There has also been studied a case of mental deafness. The results of a series of psychological experiments in the Air Service have been prepared for publication.

Under Professor Tolman's direction the following work has been carried on:

(1) Experiments on the inheritance of learning ability in white rats. The experimental work has been done by Mr. Frederick J. Adams and has been in progress for two years. "Brightness" and "dullness" are measured by the rat's ability to learn a maze; and two strains, a "bright" and a "dull," are being established by selective breeding.

(2) Experiments on the causative factor in the fixation of habit. This study has consisted of a series of general laboratory experiments and of a special investigation devised and carried out by Mr. Z. Y. Ku. The general result of the entire series has been to indicate that reward

(or success) is a stronger causative factor in determining the learning of an act than is the mere frequency or recency of the mechanical repetition of the act.

(3) Scientific ability. This work has consisted in the development of some tests, both for college students and for younger children, which will select a specific "scientific" or "analytical" ability.

Professor Brown has continued his investigation of the possibility of predicting the results of practice and the acquisition of skill from the scores made at the beginning of practice. In this work he has had the assistance of a group of graduate and undergraduate students. In connection with the same experiments various students have made detailed studies of the form of the practice curve and of the peculiarities of individuals which are manifested in the learning process, particularly of those individuals who are notably good or bad learners. Studies have been made by graduate students on the effect of punishment upon learning in animals and in human beings; and on the effect of suggestion upon the ability to solve problems. It has been found that the appearance and condition of the room in which a person works affect his capacity to solve problems to a marked degree. Another graduate study has demonstrated that the associations with a standard list of words are nearly the same now as determined by Kent and Rosanoff in 1910. Another student has investigated the volitional responses of a group of high school boys according to the technique proposed by Downey. This study is a continuation of an investigation begun at the Whittier State School.

In clinical psychology, under the direction of Dr. Olga Bridgman, Associate Clinical Professor of Abnormal Psychology, there has been a continuation of some of the investigation begun in earlier years and some smaller pieces of work have been carried on to completion. An extensive study has been made of a large group of defective delinquent girls in the San Francisco Juvenile Court. Research is in progress on the comparative value of probation in the Juvenile Court for female recidivists of the three mental groups, the normal, the borderline and the defective. Statistical data on the subject of the mental requirements for various types of unskilled work as shown in the working record of the older girls appearing before the San Francisco Juvenile Court have brought out evidence that there is a distinct place for the defective girl in industry. A comparison of a group of normal American-born children of North European descent with a corresponding group of American-born children of Chinese parentage indicates the rich possibilities in this community for the investigation of racial differences and similarities. A group of students has been working in the Washington Grammar School of San Francisco, a school whose population is predominantly Italian, either of Italian birth or parentage. The boys of this school are almost without exception far below the level of the average public school boy, and the investigation is being planned to show, if possible, whether the defect is racial and likely to be permanent, or whether it is merely a result of a long continued unsatisfactory environment. There is already some slight evidence to bear out this last idea.

Physical Education for Men.—The administration of the Department of Physical Education for Men during the academic year 1920-21 has followed the general plan outlined in the annual report for the previous year, which discussed in considerable detail the various phases of the department's procedure and policies with regard to research, graduate study, professional training, and athletics.

In explanation of the following statistics it may be well to point out that while the totals given for athletics participated in on the credit basis, 2358, 2219, 2034, and 2027 (Tables I, II, III, and IV) represent systematic activity at least twice a week over the entire period, the totals for intramural sport, 400, 1128, 542, and 358 (Tables I, II, III, and IV) represent spasmodic activity of little value in most cases as a source of physical development or efficiency. The totals given of men training for intercollegiate competition are relatively small, 610, 705, 883, and 687 (Tables I, II, III, and IV) but steadily increasing over previous years. These figures represent activity over a relatively short period of time. For the man who is an all-round athlete and who can shift from one sport to another as the seasons change the present system of intercollegiate and intramural athletic sports offers possibilities for systematic physical training through athletics. Such men are relatively few. The work that men do while engaged in training for intercollegiate athletic competition is much greater, however, than that done under the credit or intramural system. Barring dangers to body from strain and accident and to scholastic standing from undue expenditure of time and energy, much greater good, both physical and mental, is undoubtedly gained by the man engaged in intercollegiate athletics than by the man in either the credit or the intramural branch of athletics.

TABLE I

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA.
OCTOBER 1, 1920

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	1 Credit Required	2 Credit Elective	3 Total	4 Without Credit Elective	5 Grand Total
1.	Gymnastics	519	6	525	.....	525
2.	Special Gymnastics	34	3	37	.....	37
3.	Track	199	14	213	95	308
4.	Baseball	41	2	43	22	65
5.	Basketball	150	11	161	12	173
6.	Tennis	130	19	149	41	190
7.	Boxing	494	40	534	6	540
8.	Wrestling	179	22	201	3	204
9.	Fencing	10	3	13	1	14
10.	Swimming	232	17	249	2	251
12.	Soccer	15	1	16	44	60
13.	Football	88	6	94	31	125
15.	Handball	1	1	2	.....	2
17.	Elementary Tumbling	43	2	45	11	56
18.	Crew	55	2	57	93	150
101A.	Const. and Adminis. Playgrounds .....	.....	13	13	.....	13
122A.	Athletic Supervision .....	.....	4	4	.....	4
301A.	Methods and Practice in Teaching .....	.....	2	2	.....	2
Totals		2190	168	2358	361	2719

PARTICIPATION IN INTRAMURAL SPORTS FROM AUGUST 15 TO OCTOBER 1, 1920

Inter-class Football	300 men
Inter-class Swimming	35 men
Baseball (Peanut League)	65 men
Total	400 men

EXHIBITIONS STAGED BY THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Boxing (American Legion)	4 men
Wrestling (American Legion)	4 men
Two events—Total	8 men

MEN TRAINING FOR INTERCOLLEGIATE ACTIVITIES, AUGUST 16 TO OCTOBER 1, 1920

CREW:		SOCCER:		TENNIS:	
Varsity	75	Varsity	45	Varsity	47
Freshman	75	Freshman	15	Freshman	26
—	150	—	60	—	73
FOOTBALL:		SWIMMING:		TOTAL	610
Varsity	65	Varsity	2		
Freshman	60	Freshman	4		
—	125	—	6		
GYMNASTICS:		TRACK:			
Varsity	16	Varsity	120		
Freshman	0	Freshman	60		
—	16	—	180		

TABLE II

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA,
DECEMBER 1, 1920

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	1 Credit Required	2 Credit Elective	3 Total	4 Without Credit Elective	5 Grand Total
1.	Gymnastics	353	4	357	.....	357
2.	Special Gymnastics	27	1	28	.....	28
3.	Track	228	14	242	87	329
4.	Baseball	46	1	47	20	67
5.	Basketball	196	11	207	81	288
6.	Tennis	128	15	143	35	178
7.	Boxing	523	34	557	6	563
8.	Wrestling	172	20	192	20	212
9.	Fencing	11	3	14	1	15
10.	Swimming	165	10	175	7	182
11.	Rugby Football	6	.....	6	19	25
12.	Soccer	22	2	24	35	59
13.	American Football	82	5	87	23	110
14.	Handball	3	1	4	.....	4
15.	Tumbling	45	2	47	10	57
16.	Crew	67	2	69	73	142
17A.	Const. and Adminis. Playgrounds .....	.....	13	13	.....	13
18A.	Athletic Supervision .....	.....	5	5	.....	5
19A.	Methods and Practice in Teaching .....	.....	2	2	.....	2
	Totals	2074	145	2219	417	2636

PARTICIPATION IN INTRAMURAL SPORTS FROM OCTOBER 1 TO DECEMBER 1, 1920

Inter-class Basketball	37 men
Inter-fraternity Baseball	360 men
Inter-club Baseball	100 men
Inter-fraternity Track	225 men
Inter-club Track	180 men
Non-organization Track	75 men
Peanut League (Baseball)	65 men
Inter-school Football (Medical)	30 men
Tennis Tournament, Vars.-Fresh. Elimination	56 men
Total	1128 men

EXHIBITIONS STAGED BY THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Rotary Club	Gym Club	7 men
	Basketball	10 men
	Gymnastics	16 men
	Boxing	100 men
	Wrestling	30 men
Amendment 12.....	Gym Club	7 men
	Boxing	6 men
	Wrestling	4 men
Berkeley Y. M. C. A...	Gym Club	7 men
A. A. U. (S. F.).....	Gym Club	7 men
Smoker Rally	Boxing	4 men
	Wrestling	4 men
Moose Lodge	Wrestling	4 men
Y. M. C. A.	Wrestling	4 men
Total events, 77.	Total	210 men

MEN TRAINING FOR INTERCOLLEGIATE ACTIVITIES, OCTOBER 1 TO DECEMBER 1, 192

BASKETBALL:		GYMNASTICS:		SWIMMING:	
Varsity	48	Varsity	16	Varsity	5
Freshman	60	Freshman	0	Freshman	4
	108		16		
CREW:		RUGBY:		TENNIS:	
Varsity	73	Varsity	25	Varsity	20
Freshman	69	Freshman	0	Freshman	36
	142		25		
FOOTBALL:		SOCCER:		TRACK:	
Varsity	58	Varsity	45	Varsity	120
Freshman	52	Freshman	14	Freshman	60
	110		59		
				TOTAL	70

NOTE.—Voluntary participation in invigorating sports by college students means the abandonment of *undesirable forms* of recreation, means greater efficiency in intellectual endeavor, a finer spirit of democracy and institutional morale and a superior university product of Americanism.

Students to whom time means money in support of mere existence or the opportunity to acquire information for future usefulness will not take time to seek recreation on gymnasium floor or athletic field if they find it necessary to wait hours for the chance to use fields, tennis courts, etc., or necessary to travel far to reach such facilities. This is especially true if students find squalid, overcrowded, unattractive conditions when they are seeking recreation and relief from sedentary pursuits.

The University should have at least three times its present equipment of gymnasium, athletic fields and tennis courts, and should have adequate swimming pools, handball courts, and other facilities at points convenient for student use. It should be possible for a student to dress, exercise and bathe within the period of one hour, thus enabling him to fit his physical education into the schedule of other university work. (One of the department's heaviest periods of enrollment is now the 10–11 hour.) The directing personnel for the physical education and recreational guidance of the students should be doubled satisfactorily to meet the present demands of the University's 10,000 students.

TABLE III

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA,
MARCH 1, 1921

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	1 Credit Required	2 Credit Elective	3 Total	4 Without Credit Elective	5 Grand Total
1.	Gymnastics	244	4	248	1	249
2.	Special Gymnastics	44	5	49	3	52
3.	Track	202	43	245	65	310
4.	Baseball	63	16	79	16	95
5.	Basketball	93	11	104	50	154
6.	Tennis	96	30	126	15	141
7.	Boxing	599	46	645	30	675
8.	Wrestling	191	33	224	12	236
9.	Fencing	16	3	19	2	21
10.	Swimming	159	22	181	8	189
15.	Handball	2	.....	2	2	4
17.	Tumbling	30	12	42	4	46
18.	Crew	41	23	64	35	99
301.	Methods and Practice in Teaching .....	.....	6	6	.....	6
Totals		1780	254	2034	243	2277

PARTICIPATION IN INTRAMURAL SPORTS FROM JANUARY 17 TO MARCH 1, 1921

Inter-class Track	250 men
Get-acquainted Track Meet	200 men
Inter-class Swimming	92 men
Total	542 men

EXHIBITIONS STAGED BY THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Mining School	Wrestling	4 men
	Boxing	2 men
P. G. and E.	Wrestling	4 men
Ad Club	Wrestling	2 men
Total		12 men

MEN TRAINING FOR INTERCOLLEGIATE ACTIVITIES, JANUARY 17 TO MARCH 1, 1921

BASKETBALL:		CREW:		TENNIS:	
Varsity	44	Varsity	54	Varsity	13
Freshman	50	Freshman	45	Freshman	11
Wt. Teams	60		99		24
	154				
BASEBALL:		GYMNASTICS:		TRACK:	
Varsity	50	Varsity	18	Varsity	175
Freshman	95	Freshman	2	Freshman	135
	145		20		310
BOXING:		SWIMMING:		WRESTLING:	
Varsity	20	Varsity	25	Varsity	16
Freshman	34	Freshman	24	Freshman	12
	54		49		28
				TOTAL	883

TABLE IV

REPORT OF ATHLETIC ACTIVITY IN THE UNIVERSITY OF CALIFORNIA,
MAY 1, 1921

ENROLLMENT IN THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Course No.	Activity	1 Credit Required	2 Credit Elective	3 Total	4 Without Credit Elective	5 Grand Total
1.	Gymnastics	228	3	231	1	232
2.	Special Gymnastics	36	5	41	2	43
3.	Track	204	44	248	61	309
4.	Baseball	55	17	72	15	87
5.	Basketball	97	11	108	4	112
6.	Tennis	101	32	133	17	150
7.	Boxing	614	44	658	32	690
8.	Wrestling	183	30	213	18	231
9.	Fencing	14	3	17	3	20
10.	Swimming	161	29	190	8	198
15.	Handball	2	.....	2	2	4
17.	Tumbling	30	11	41	4	45
18.	Crew	43	24	67	33	100
301.	Method and Practice in Teaching .....	.....	6	6	.....	6
Totals		1768	259	2027	200	2227

PARTICIPATION IN INTRAMURAL SPORTS FROM MARCH 1 TO MAY 1, 1921

Inter-fraternity Basketball	252 men
Inter-club Basketball	49 men
Inter-class Boxing	21 men
Inter-class Wrestling	18 men
Inter-class Fencing	6 men
Inter-class Gymnastics	12 men
Total	358 men

EXHIBITIONS STAGED BY THE DEPARTMENT OF PHYSICAL EDUCATION FOR MEN

Gym Club	H. G., between Interclass, boxing and wrestling....	4 men
	Oakland Auditorium, Stanford-California basket- ball game	8 men
	Lakeside Canoe Club Smoker	5 men
	Stanford University	2 men
	Athens Club, Oakland Auditorium	6 men
Boxing.....	Oakland Y. M. C. A. Circus	6 men
	Alameda School	2 men
	Athens Club, Oakland (mass boxing).....	100 men
	Athens Club, Oakland (bouts)	12 men
	Oakland Lodge of Moose	2 men
Wrestling.....	Elks Auditorium	4 men
	Smoker, Harmon Gymnasium	4 men
	American Legion, Los Banos	2 men
	Athens Club, Oakland Auditorium	4 men
	Elks Club	4 men
Boy Scouts		2 men
Events, 12—Total		167 men

MEN TRAINING IN INTERCOLLEGIATE ACTIVITIES, MARCH 1 TO MAY 1, 1921

BASEBALL:		GYMNASTICS:		TRACK:	
Varsity	47	Varsity	17	Varsity	167
Freshmen	86	Freshman	2	Freshman	126
133		19		293	
BOXING:		SWIMMING:		WRESTLING:	
Varsity	17	Varsity	28	Varsity	15
Freshman	29	Freshman	26	Freshman	10
46		54		25	
CREW:		TENNIS:		TOTAL	
Varsity	49	Varsity	15	6	
Freshman	41	Freshman	12		
90		27			

Physical Education for Women.—Three new members were appointed to the Department of Physical Education for Women for the past year: Miss Frances Bockius, formerly Director of Physical Education at Rockford College, Rockford, Illinois; Miss Violet Marshall, formerly acting head of the Department of Physical Education at Mount Holyoke College, Holyoke, Massachusetts; and Mrs. Marion Berry Knight, formerly Director of Physical Education in the Brooklyn Y. W. C. A., Brooklyn, New York. These three appointments filled the vacancies made by the resignations of Miss Florence Eisenhardt, Miss Ruth Findlay, and Miss Mary Woodford. The enrollment in this department for the past year was 8147, an increase over last year.

Enrollment in required courses was	5241
Enrollment in elective courses was	2906
Total	8147

The following tables show enrollment statistics:

TABLE I

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN, 1920-21

ENROLLMENT IN REQUIRED COURSES

	Aug. 1920	Jan. 1921	Totals
Regular required courses for Freshmen	1150	943	2093
Restricted required courses for Freshmen	62	43	105
Corrective and remedial required courses for Freshmen....	159	130	289
Regular required courses for Sophomores	793	763	1556
Restricted required courses for Sophomores	30	28	58
Corrective and remedial required courses for Sophomores	25	29	54
Special required classes for students whose physical condition showed the need of additional work:			
Abnormal menses	135	55	190
Foot class	175	52	227
Posture class	275	394	669
Totals	2804	2437	5241

TABLE II

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN, 1920-21

ENROLLMENTS IN ELECTIVE COURSES

	Aug. 1920	Jan. 1921	Totals
Theoretical work in Gymnastics, Folk and Classic Dancing	238	135	373
Theoretical Upper Division courses	112	131	243
Artheneia Training course		287	287
Athletic activities	1234	719	2003
Totals	1634	1272	2906

Fifteen hundred and sixty-eight entering students were examined by the department in August, 1920, and 210 in January, 1921. The additional rooms constructed at the east end of Hearst Hall provided the Infirmary physicians with light, warm, and quiet examining rooms. The department and Infirmary staff greatly appreciated this improvement.

Following the entrance examination each student was assigned to regular, restricted, or special corrective sections, according to the result of her medical and physical examination. The improvement noted in the well-being and carriage of the entering student last year was evident in

this year's examinations. The subsequent examinations held for each student at the close of her second and fourth term of required work were most gratifying.

A large variety of games has been added to the required work of the freshmen classes and has proved most valuable. The department wishes again to point out the severe handicap to its work in the lack of playing space for the women students. The department wishes to place athletic activities in the programme of required work but at present playing space and equipment make such development impossible.

The department has placed special emphasis on the follow-up work during the past year. Records are kept of all absences with reasons. Excuses are required before any absence is incurred. In this way the department has an accurate knowledge of the health of the students. All absences are carefully followed up and many students are referred to the Infirmary for treatment who otherwise would not go. Four hundred and eight women were sent to the Infirmary and reports were sent to the department by the physicians. In this way the department coöperates with the Infirmary in maintaining a high standard of health among the student body.

The annual indoor interclass competition was held in April this year. Five classes, including the graduates, competed. The competition was well attended and great enthusiasm was shown by onlookers and participants.

One thousand and eighty-six students were enrolled in special classes during the past year; 227 for foot conditions, 669 for poor posture, and 190 for abnormal menses. The majority of students show a marked improvement and are dismissed at the end of a term's attendance.

Rest period classes which were instituted at the time of the influenza epidemic have been continued. Two hundred and twenty-three students were enrolled in these rest period classes during the past year. One hundred and seventeen were enrolled temporarily and 106 remained there during the entire year. Students are assigned to these special rest period classes, in place of the regular required work, upon the advice of the Infirmary and this department. Hearst Hall is equipped with three rest rooms with cots and blankets. These rooms are reasonably quiet and pleasant. Students who are living at home are given special permission by the department to take their rest periods at home. Members of these classes are taught breathing and relaxation exercises and are required to rest for at least one hour every day, including Saturdays and Sundays. Reports must be turned in weekly and a conference is arranged with the instructor in charge once every week.

During the first semester a special class was offered for general recreation, open to students not taking other work in the department, to the women of the faculty, and to women employees of the University. There is a great need and demand for such a course. The department plans to offer this course again next year.

The special training class for the Partheneia dancing was conducted by Frances Bockius, Associate in Physical Education, during the second semester; 287 women enrolled in this course.

The five-year teacher training course has been further developed during the past year more fully to meet the needs of the teacher of physical education. At no time has there been such a demand for teachers of this subject throughout this state and throughout the nation. The University has an unusual opportunity to serve the state in this respect not only in training teachers for public school work, elementary supervisors and general school instructors, but instructors in college and university departments.

physical education, playground directors, and recreation leaders in industrial and social positions.

The department is working out, through the coöperation of the Department of Economics, a training course for university women in social science with special emphasis on physical education. Such a course will doubtless appeal to a large number of University women.

Special emphasis has been given during the past year to club work for girls. The department was fortunate in having Miss Daymon, Pacific Coast Field Secretary for Girls' Club Work of the Y. W. C. A., address the major students, and Miss Kempthorne, National Field Representative of the Camp Fire Girls. Major students in the department after completing the five-year training course are prepared to be leaders of such activities. Many of our undergraduates are responsible for large groups of girls in club work.

The department plans to offer a special course in the training of women for special corrective work and industrial physio-therapy.

Several members of the staff, in spite of the fact that the department classes and conferences take practically all of their time, are working on special problems; but until the staff is increased such research activities will of necessity be very limited.

During the past year there were 2003 enrollments in athletic activities distributed among the following sports; fall term—fencing, handball, hockey, and tennis; spring term—basketball, canoeing, crew, and tennis. Inter-class hockey was played with both Stanford University and Mills College this year, handball with Mills College, and tennis with Stanford University.

The annual fall field day was not held this year on account of the early rains. The annual spring field day was held on April 9, with inter-class competition in basketball and tennis during the morning, followed by luncheon in the Faculty Glade, where All-California and "C" members were announced. During the afternoon the annual regatta was held on Lake Merritt with crew and canoe inter-class competition.

Horsemanship is being organized as a sport for University women, and the department hopes to offer archery and hiking as organized sports for the coming year.

The women's swimming pool, the gift of Mrs. Phoebe Hearst, will be equipped with a heating and filtering system and will be opened as soon as this work is completed. The expense of this improvement will be met by a pledge from the Associated Women Students and by the Regents of the University. The pool with the new-equipment will offer a most wholesome form of recreation to the women students of the University.

"La Rapiere" has been revived during the past year. This organization furnishes an excellent opportunity for both men and women who are proficient in fencing to meet for instruction and informal bouts.

The Sports and Pastimes Association sent a delegate to the Convention of College Women's Athletics held in Indianapolis in March, 1921.

The crowded conditions in Hearst Hall were somewhat relieved by the installation in January, 1921, of 500 new steel lockers. During the August semester over 400 students were without lockers. The new lockers have been placed on the lower floor of Hearst Hall, waiting to be removed to the new shower house to be constructed in the near future.

Four new instructor's offices were constructed early in the fall at the west end of Hearst Hall, two on the lower floor and two on the main floor. These offices are used at the beginning of each term for examining students and during the year for instructor's offices. This addition has been greatly appreciated by both instructors and students.

Physics.—The return to approximately normal conditions following the disturbance due to the war was indicated by the great increase in the number of upper division and graduate students, which caused the enrollment to exceed that of last year, although there was some reduction in the number of first-year students. In preceding years the overcrowding due to limited space was most appreciable in the lower division laboratories. For two years this has been partly relieved by the abandonment of laboratory work for first-year engineering students. This year the congestion was most embarrassing in research accommodations. Rooms barely larger than closets and the ends of hallways have been used for this purpose, and in some cases students have had to take turns in working in the same small room with the same apparatus. In spite of these adverse conditions, there has been a notable increase in the research activities of the department. The number of graduate students from other institutions has increased, and there have been more applications for teaching fellowships from graduate students all over the country than ever before. With a new building and strengthened staff, the prospects of the department will be very bright.

Miss Alice Scouart, Belgian Relief Commission Fellow in Physics, has been in residence during the year, and may continue her work here next semester.

During the year the following publications from this department have appeared: Frederick Slate, Professor Emeritus of Physics, *A New Reading of Relativity*; *Electronic Energy and Relativity*; Dr. E. P. Lewis, Professor of Physics, *The Continuous Spectrum of Hydrogen in The Schumann Region*; Dr. R. T. Birge, Assistant Professor of Physics, *The Mathematical Structure of X-ray Spectra*; *The Balmer Series of Hydrogen and the Quantum Theory of Line Spectra*; and *The Relativity Shift of Spectrum Lines*; C. H. Kunsman, *A Study of the Residual Ionization in a Gas* (doctor's thesis); W. H. Blair, *The Spectra of Some Compound Gases* (doctor's thesis); A. C. Hardy, *A Study of the Persistence of Vision* (master's thesis); R. B. Abbott, formerly Instructor in Physics, and J. W. Cook, *The Velocity of Sound from a Moving Source*; Paul Kirkpatrick, *A Thermoelectric Motor*; Evald Anderson, *Nature of Ionization in a Point to Plate Discharge*.

Professor Lewis has continued his study of the spectra of hydrogen and nitrogen. Dr. E. E. Hall, Professor of Physics, is studying the heat conductivity of iron at high temperatures. Under the direction of Professor Minor, Mrs. Evelyn Aylesworth has investigated the optical properties of silicon, and C. G. Thompson the absorption of optical glasses. W. J. Raymond, Associate Professor of Physics, has completed a very efficient mechanical curve tracer for the study of complex wave forms. Dr. L. T. Jones, Assistant Professor of Physics, has designed and tested various forms of mercury vapor air pumps, and is constructing an entirely new form. He has continued his experiments on the velocity of sound as a function of the velocity of the source. With H. G. Tasker, he has begun an investigation of the dielectric constant of gases by a new method. Dr. Elmer Dershem, Instructor in Physics, has completed a powerful X-ray spectrometer, and also a crystal X-ray concentrator which will prove useful in medical research. He is planning a new X-ray vacuum spectrometer, for which funds have been provided by the Board of Research. Working with him, Dr. A. R. Olson, Research Associate in Chemistry, has studied the relation between X-ray absorption and chemical constitution. C. T. Dozier, Associate in Physics, has discovered the explanation of the diffraction patterns produced by X-rays in passing through rolled metals, and Paul Kirkpatrick has studied X-ray polarization.

Miss Edith Cummings, Lick Fellow, has made successful use in the study of stellar magnitudes of the photoelectric photometer designed by Dershem and built in the shop of this department. Other investigations in which progress has been made are: W. H. Williams, Instructor Physics, *The Effects of Conditions upon the First and Second Band Lines in the Spectrum of Nitrogen*; J. J. Hopfield, Whiting Fellow, *Extreme Ultra-violet Spectra*; Richard Hamer, Whiting Fellow, *The Limiting Wave Lengths in the Photoelectric Effect*; Miss Jean Huddleston, *The Pressure Effect in Spark Spectra*; A. K. Aster, *The Optical Properties of Thin Metals*; I. L. Jones, *The Vacuum Tube Spectra of Metals*.

On account of the increased cost of apparatus and materials and the employment of one mechanic, the laboratory equipment has been greatly depleted and many instruments are awaiting repair. It is hoped that during the coming year these conditions may be remedied.

Political Science.—A number of changes have taken place in the personnel of the department. Dr. E. M. Sait, of Columbia University, was appointed Professor of Political Science. In the middle of the year, Professors E. M. Elliott and J. R. Douglas resigned from the University. It was fortunately possible to secure for the semester the services of Professor Raymond G. Gettell of Amherst College. He lectured on *Political Theory and American Government*. A seminar on *International Relations*, conducted by President Barrows, strengthened the department in the field of graduate instruction. In making arrangements for the year 1921-22 it was necessary to provide not only for the vacancies just mentioned, but also for the courses of T. H. Reed, Professor of Municipal Government, who would be absent on sabbatical leave. Frederick J. Hart entered the department as Associate Professor of Social Institutions. Samuel C. May, M.A., of Dartmouth College, was appointed Assistant Professor of Public Administration; F. M. Russell, M.A., of Stanford Junior University, Lecturer in Political Science; and Eliel, Ph.B., Lecturer in Municipal Government. It was further agreed that President Barrows should, in conjunction with Mr. Russell, teach the fundamental lower division course in *Comparative Government*. Marked progress was made during the year in developing the documentary materials in the Bureaus of Public Administration and International Relations. As the department contemplates a steady expansion of its interest in foreign relations, more emphasis will have to be laid on providing adequate facilities for research.

Public Speaking.—During the past year the department suffered the loss of two of its most valued instructors: Miss Caroline Duncan, Associate Professor of Public Speaking, who was forced to withdraw on account of illness; and Dr. George Boas, Assistant Professor of Forensics, who resigned. Miss Sara Huntsman, who has been appointed to succeed Miss Duncan, came to the University from the State College of Utah, where she was Professor of the Department of Public Speaking. The position made vacant by the resignation of Professor Boas is still to be filled. It was found during the past year that the large classes necessitated by an unprecedented enrollment made against effectiveness of instruction, especially in the lower division courses. This overcrowding emphasizes the pressing need of the department for an increase in the number of instructors.

The policy of the department, inaugurated some years ago, of offering series of public lecture recitals was continued last semester by a series

of interpretative readings given by Miss Florence Lutz. A group of modern one-act plays was successfully produced by students acting under the direction of C. D. von Neumayer, Associate Professor of Public Speaking and Dramatic Art. In the annual debating contest between Stanford University and the University of California the Joffe Medal for 1920 was awarded to Clifton C. Hildebrand of the University of California.

Semitic Languages.—The department conducted three language courses in Hebrew and one in Arabic, as well as lecture courses in Hebrew Literature, Hebrew History, and Muhammadanism. The two lines of research that have engaged the attention of the department for several years were followed further: the edition of an Arabic historical text which serves as a source-book for certain periods of Egyptian history (Vol. 6, No. 4, of the Semitic Series appeared during the year; Nos. 5 and 6 are ready for publication); and a revision and new translation of the Hebrew text of Isaiah (also ready for publication).

Slavic Languages.—During the year instruction was given in the Russian, Polish, Bohemian, Serbo-Croatian, and Old Church Slavic languages. Lecture courses were given on *The Russian Novelists of the Nineteenth Century*, *Recent Russian Literature*, *Polish and Bohemian Literature*, *The Political Development of Modern Russia*, *Russian Commerce and Industry*, and *The Serbian People*.

Since 1914-15 there has been a steady increase in the number of students taking courses in the department. In 1920-21 the enrollment was 716 (124 in language courses); in 1919-20 it was 422 (116 in language courses); and in 1914-15 it was 50 (15 in language courses).

This year the registration in the lecture courses has varied from 150 to 232, and a gratifying number of students has continued the study of Russian for the third and fourth year. The difficulty is to offer instruction of the different types required without laying an undue burden on the teachers in the department. It seems equally wrong to refuse two or three students an opportunity to continue their language studies, to discourage a single capable student from becoming a candidate for a high degree, and to omit a lecture course that will appeal to a large number of students. Thus the department, with an enrollment still comparatively small, has much the same problems to face as the largest departments of the University.

Spanish.—The many problems connected with the Lower Division, such as overcrowding, and insufficient numbers of teachers, still remain unsolved. The Department of Spanish is firmly convinced that the situation of the languages will never be remedied without entrance examinations. The same conditions have prevailed in the upper division classes, where only seventy per cent of all applicants have been accepted. The teaching staff for the Upper Division could easily be doubled. This unfortunate situation in both the Lower and Upper Divisions is responsible for the fact that large numbers of students who would continue their Spanish work through a graduate course, drop out long before the fourth year of their course.

In the graduate courses, a number of students have ability in research and in independent investigation, as is evidenced by the fact that about a half a dozen theses for the master's degree have been written, covering a fairly wide range of literary studies.

The department itself has made considerable progress in publication. Dr. S. G. Morley, Associate Professor of Spanish, has spent the year in Spain, preparing a number of studies in the drama and in ballad poetry.

Dr. E. Buceta, Assistant Professor of Spanish, has continued his contributions to the study of lyrical poetry, and Dr. R. Schevill, Professor of Spanish, has progressed further with his critical edition of the works of Cervantes. This and other publications have been recently recognized by making Professor Schevill honorary member of the Hispano-American Academy at Cadiz, Spain, and of the Academy of Belles Lettres at Barcelona.

The work of the department in the graduate school would be greatly strengthened by the addition of a man who could devote himself more exclusively to courses in the science of language, phonetics, and old Spanish.

Zoology.—At the beginning of the year Dr. C. V. Taylor, after spending a year in research at Johns Hopkins University, returned to the University as Assistant Professor of Zoology. Dr. Taylor took charge of the laboratory instruction in Zoology 1A, and during the absence in Europe of Dr. C. A. Kofoid, Professor of Zoology and Assistant Director of the Scripps Institution for Biological Research, shared in the lectures with Dr. S. S. Holmes, Professor of Zoology. In the fall semester Professor Taylor will assume the entire responsibility of the introductory course.

The enrollment in the courses in the department totaled a little over 2000, or about 25 per cent more than last year. The expansion of the elementary courses and the continued development of advanced instruction and investigations both by graduate students and by the staff emphasize the need for more space and especially for quarters for the maintenance of an animal colony, and for clerical and technical assistance.

Research by Professor Kofoid published during the past year include:

1. A statistical study (in conjunction with Lieutenant Tucker) of the relationship of hookworm infection in United States troops to morbidity and mortality with especial reference to the incidence of pneumonia and to the inhibition of mental development of soldiers, as revealed on a comparison of the results of the psychologic tests of men with and without the infection.

2. A paper was read (abstract published) at the symposium of the American Society of Zoologists supporting the normal interpretation of the mechanism of heredity in the protozoa as over against that of the Chaudinn-Hartmann school. This was based upon the study of cytological phenomena of the intestinal protozoa.

3. A critical analysis of the flagellate infections of man, other than those of the blood, has been published in conjunction with Dr. Olive Swezy, Research Associate in Zoology, in Nelson's *Loose-Leaf Encyclopedia of Living Medicine* for the use of clinicians and diagnosticians.

Four main lines of research have been prosecuted during the year by Professor Kofoid.

1. The intestinal protozoa of man, in conjunction with Dr. Swezy. Three papers, one on *Mitosis in Endamoeba coli* by Dr. Swezy, and two by Professor Kofoid and Dr. Swezy, *On the free and encysted stages of Giardia lamblia of man*, and *On Councilmania laflauri, a new pathogenic amoeba of man*, are nearly ready for the press. This work is planned to result in a monographic treatment of these infections of man. It is carried on in connection with the California State Board of Health. The University infirmary and a number of physicians in the bay region and Los Angeles are coöperating in tests of methods of treatment. As a result of this

work a considerable interest in these infections has been aroused in the medical profession, and not a few cases of ill health of obscure origin have been relieved by treatment following the discovery of these infections.

In connection with these investigations, two papers have been published by Professor Kofoid and Dr. Swezy in the medical press, *On the prevalence of carriers of Endamoeba dysenteriae among soldiers returned from overseas service*, and on *Hookworm and Amoebiasis in California*.

2. The parasites of the Termites. Material has been secured for this study from California, the Philippines, and an especially fine collection from the Tropical Laboratory of the New York Zoological Society at Kartabo, British Guiana. Some progress has been made in the study of the living material, in the preparation of material for further study and in the preparation of illustrations.

3. The marine protozoa of the tropical Pacific. Progress in this field has been seriously interrupted by the sickness of, and later a severe accident to, Miss Hughes, employed as research assistant in this work. Some work has been done in the completion of the manuscript of the report on *The Tintinnoida of the Expedition to the Eastern Tropical Pacific*.

4. The marine borers of San Francisco Bay. In conjunction with the San Francisco Bay Marine Piling Committee of the American Wood Preservers Association a study of the causes of the grave damage to marine structures in San Francisco Bay in 1920, aggregating over \$15,000,000, was undertaken in September, 1920. It resulted in a progress report of 104 pages and 36 plates presented at the Annual Convention of the Association to January, 1921. The biological part of this report was prepared by Professor Kofoid.

It is the plan to continue this survey on a broader scale for three years. As a result of Dr. Kofoid's efforts, the local committee has raised \$30,000 for a three years' programme and the National Research Council at Washington has appointed a special committee to establish a national research programme in extension of the local one which is to be continued here under the guidance of a local advisory committee of the University.

In addition to these more personal researches, the following work has been undertaken by graduate students under Professor Kofoid's direction: the ciliates of ruminants; the neuromotor system of *Paramecium*; the recovery of *Cercomonas* from human stools; amoebiasis in rats; studies on *Trichomonas*. Undergraduates have made studies on: blood cultures of intestinal flagellates; experimental infection of rodents with human parasites; and the anatomy of *Teredo*.

In addition, six physicians have worked for brief intervals in Dr. Kofoid's laboratory on amoebiasis, one from Los Angeles, one from Sacramento, two from Oakland, and two from Berkeley, and several physicians' technicians have taken special work with him.

A large part of the scholastic activities of Professor Holmes has been devoted to completing a work on the biological factors in human evolution, which is now in the stage of paged proof, and in compiling for publication a rather extensive bibliography on this subject. He has recently received a grant from the Carnegie Institution so that he may visit various libraries in the East to obtain additional material. Studies are also being carried on by Dr. Holmes upon the *Selective Death Rate in the First Year of Life*, the results of which will be presented at a meeting of the Eugenics Research Association in June.

Mention may also be made of the following research under Dr. Holmes' direction, by graduate students: coördination in the behavior of the star-

fish; relation between marriage rate and scholastic standing of the women graduates of the University of California up to the year 1910; inheritance of musical ability; linkage in *Drosophila*; relation of war to the sex ratio at birth; possible influence of environment in producing variations in the fruit fly *Drosophila*; and of studies by undergraduates on: relation between order of birth and eminence; tropisms and reactions of the primitive insects of the order Thysanura.

Dr. J. F. Daniel, Professor of Zoology, is completing his book, *The Anatomy of the Elasmobranch Fishes*, which has been several years in preparation. This will be published as a memoir in the University of California Publications the coming year. Professor Daniel is conducting further experimental work on mice. Under his direction students have been conducting research on the cutaneous vessels of certain Elasmobranch fishes, on the branches of the subclavian artery, on the trigeminal and facial nerves and on the paired branches from the dorsal aorta of *Squalus sucklii*.

Dr. J. A. Long, Associate Professor of Embryology, in coöperation with Professor H. M. Evans, has a paper in press on the *Oestrous Cycle in the Rat*, the result of several years work; and is continuing, also with Professor Evans, investigations on the effect of internal secretions on the oestrous cycle of the rat. He is also carrying on studies in the embryology and anatomy of the rat.

Graduate students with Dr. Long have been studying the changes in the vaginal mucosa of the guinea pig, the oestrous cycle in the mouse, and the early stages of body-formation; and undergraduates have been at work on various phases of the development of the rat; the uterine changes at implantation; the thyroid of the rat; and synapsis in *Drosophila*.

Dr. F. P. Reagan, Assistant Professor of Zoology, has been continuing his study of the development of the Azygos Veins in several mammals, and has prepared a manuscript based on the injection of the vessels of several hundred embryos and careful dissections of many of these. He has also manuscripts on the effect of inhibition of the closure of the neural tube on the development of the skeleton; and on staining reactions of erythrocytes. Graduate students working with him have completed a thoroughgoing study of the shoulder venous drainage in a number of mammals, and are studying muscle variation in the rabbit, and the development of the coeliac artery.

Dr. C. V. Taylor, Assistant Professor of Zoology, has published a paper on the function of the neuromotor apparatus in *Euplotes*, the result of dissection of the protozoön carried on under the microscope. He is continuing his microdissection studies, having in manuscript the two following papers: *The Behavior and Role of the Micronucleus in Euplotes*, and *The Contractile Vacuole in Euplotes, an Example of the sol-gel Reversibility of Protoplasm*. The behavior of this organelle has been carefully studied and the nature of its formation and function has been tested by the experimental method.

Graduate students with Professor Taylor have studied: the contractile vacuole in other ciliated protozoa, comparing its behavior with that observed in *Euplotes*; effect of the radio-active element, potassium, on the cleavage of fresh water and marine eggs.

ALUMNI SECRETARY

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the report of the Secretary of the California Alumni Association for the year ending June 30, 1921:

Bureau of Occupations.—The Bureau of Occupations has continued during the year the three departments of its work, namely: an economic clearing house between employers and men and women graduates of the University; the placement of undergraduate men students; and the supplying of clerical and stenographic assistance to the University.

As much investigation as possible is carried on in connection with the work of the graduates. On the one hand there has been built up a better understanding of what the University graduates are capable of doing; and on the other, recent graduates have been impressed by the fact that an apprentice period is necessary even after a degree has been obtained. Representatives of large corporations, through the initiative of the Bureau, have interviewed students before their graduation as to their definite requirements. A great deal of time is given to talking over with the students vocational possibilities, in order that they may better correlate their college studies.

A two-day vocational conference for women students was held in February. At that time, representatives of different vocations presented the requirements, opportunities and problems of their respective businesses or professions.

During the year, 256 graduates were placed, many of them in very promising positions.

Beginning with July 1, 1921, the Alumni Council has decided to place a fee of ten per cent on placements of alumni made by the Bureau. This is not designed for profit, but that the Bureau may be entirely self-supporting so far as the Alumni Association is concerned.

An effort was made to find work which would have an educational value as well as a monetary value for undergraduate men. To this end, a canvass of the entire East Bay business district was made. A fine spirit of coöperation was shown in the response, and considerable progress was made.

The number of positions filled by students was 3,094. One hundred and fifty-four positions were filled on the University clerical and stenographic staff, besides numerous calls for work lasting a few hours.

A general comparison of the work of the office this year with that of 1920 shows the progress made:

	1920	1921
Incoming mail	1,173	2,227
Outgoing mail	1,329	2,753
Personal calls	1,375	12,713
Recommendations	578	922
Placements	172	
Alumni		256
University Staff		154

Petition for Amendment 12.—During the months of June and July, 1920, the Association circulated a petition to place upon the November ballot an amendment to the State Constitution whereby the University would receive a permanent annual income by levying an ad valorem tax of one and two-tenths mills per dollar upon property taxable for general county purposes. According to law, 55,094 signatures of qualified signers were necessary to place the measure before the voters of the state. A total of 82,000 names was secured, of which number the Secretary of State certified that 79,617 were those of qualified signers. The measure then became known as Amendment 12.

Campaign for Amendment 12.—As soon as the Secretary of State announced that the measure would appear on the ballot steps were taken to organize the alumni for the campaign. A publicity committee consisting of prominent alumni was created at once. Alumni in each county throughout the state were formed into committees to secure the coöperation of the citizens. Meetings in many of the larger cities were held and a general campaign of education was carried on. A total vote of 987,632 was cast at the election November 2, 1920. Of the 764,694 persons expressing themselves on Amendment 12, 380,027 were favorable and 384,667 opposed. The measure lost by the narrow margin of 4,640 votes. The entire cost of this campaign was borne by the alumni.

Committee on Legislative Matters.—In February, President Warren Gregory appointed a committee of twenty-five alumni to study certain problems affecting the University which were then before the State Legislature. The committee met on February 12 and outlined a plan for procedure.

Assembly Visit to the Campus.—On March 11 sixty-five of the eighty members of the Assembly were brought to the campus by special train as guests of the Alumni Association. The delegates attended the University meeting where Speaker H. W. Wright, Assemblywoman Anna L. Saylor, representing Berkeley; Assemblyman A. A. Rosenshine, Speaker pro tempore; and C. M. Kline, Chairman of the Committee on Univer-

sities, were the speakers. A military review of the R. O. T. C. followed, after which luncheon was served to the guests at the Faculty Club. The afternoon was spent in sightseeing. President and Mrs. Barrows entertained the visitors at tea at their home in the late afternoon.

Alumni Convention.—On the evening of May 10, one hundred and fifty alumni gathered in Wheeler Hall for the purpose of considering a proposal to reorganize the Alumni Association. Several suggestions were made, some criticism was offered, but no action was taken. The general sentiment favored the continuation of the organization as at present constituted.

Football Dinners.—Approximately two hundred and fifty alumnae gathered on the evening of November 20 at the Berkeley Y. W. C. A. for the annual football dinner, while two hundred and ten men met at the Commercial Club in San Francisco.

Charter Day Banquet.—Charter day closed with the formal alumni banquet at Hotel Oakland. Distinguished visitors were the guests of the evening. Addresses were made by Mr. Warren Gregory, President David P. Barrows, Governor William D. Stephens, Professor Jessica B. Piexotto and Senator Arthur H. Breed.

Commencement Luncheon.—The nineteenth annual luncheon was held in Faculty Glade on Commencement day, May 11. More than 400 alumni were in attendance. Comptroller R. G. Sproul was the principal speaker of the day. S. V. Larkey, '21, permanent president of the graduating class, pledged his class to the support of the University.

Alumni Clubs.—During the campaign for Amendment 12 alumni groups met in many localities within the state. Permanent organizations exist in Los Angeles, Fresno, Stockton, Modesto, San Jose, Redding, Salinas, Santa Rosa and Santa Barbara. Alumni groups also met in Salt Lake, Tacoma, Washington, D. C., Honolulu, Shanghai and New York city.

Membership.—In December, 1920, the dues of the Association were increased from \$2.00 to \$3.00 per year and the actual paid membership in the Association increased to 5,136. This is the largest enrollment ever enjoyed by the Association.

Officers.—In May the regular election of officers took place. The following were chosen:

President, Warren Gregory, A.B., 1898.

Vice-Presidents, Clinton Miller, B.L., 1900; and Judge William H. Waste, Ph.B., 1891, LL.B., 1894.

Treasurer, Robert G. Sproul, B.S., 1913.

Councillors elected whose terms expire 1922 are: Esther B. Phillips, A.B., 1909; Mrs. Warren Olney, Jr., A.B., 1895; Walter A. Starr, Ph.B., 1897; Milton Newmark, Ph.B., 1899; Clotilde Grunsky, B.L., 1914.

Councillors whose terms expire 1923 are: Frank Otis, A.B., 1873; M.A., 1876; L. L. Nichols, A.B., 1917; C. A. Merrill, B.S., 1891; C. E. Hall, B.L., 1910; H. H. Phleger, B.S., 1912.

Respectfully submitted,

R. E. BOSSHARD,

Secretary.

APPOINTMENT SECRETARY

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit herewith my report covering the period from July 1, 1920, to June 30, 1921:

Number of candidates for positions.....	2,030
Number of positions to be filled.....	3,300
Sets of recommendations sent out.....	4,322
Letters written	13,067
Telegrams and long distance telephones.....	895
Number of visitors	9,324

We had hoped that the organization of the Alumni Bureau of Occupations would relieve the pressure on the Appointment Secretary's office. We made the same division of work that is made at the two similar offices maintained at Harvard University, the Alumni Bureau taking over the calls for chemists, engineers, business calls, and the office of the Appointment Secretary retaining all calls for teachers, scientific investigators, social workers and secretaries with special or professional training. The excellent work done by the Alumni Bureau will surely reduce the number of calls here in time, but as yet both offices have more calls than candidates.

We made a second effort to relieve the pressure on this office by opening an office at the Southern Branch of the University of California in Los Angeles. During the six weeks of the Summer Session Miss Penelope McEntyre, Assistant to the Appointment Secretary, is to be in charge.

The shortage of teachers has increased rather than diminished. There were an even thousand more calls than candidates last year. We are short 1,270 this year. One of the most important functions of a State University is the development of sound academic standards in the elementary and secondary schools of the State. This function the University of California must prepare itself to perform through the assistance of its School of Education.

Respectfully submitted,

MAY L. CHENEY,

Appointment Secretary.

CALIFORNIA SCHOOL OF FINE ARTS

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: I have the honor to present the following report of the California School of Fine Arts, San Francisco Institute of Art, for the academic year 1920-1921:

More than eight hundred students were enrolled in all departments during the course of the two sessions just closed. The work accomplished by the students has been highly gratifying as evidence of real talent.

We feel there is every reason to believe that the school is making itself more and more felt in the community and throughout the State as the guiding factor in the cultivation and understanding of the fine arts. Holding consistently to the high standard of progressive, creative ideals, not only in the departments of painting and sculpture, but in the courses offered in applied arts and commercial design as well, the influence of the School is manifest in the work of our students, many of whom go out into industrial life carrying these high ideals with them.

The course in *Art Anatomy*, given by Lee F. Randolph, Director of the School and Professor of Painting, Drawing and Anatomy, was greatly enlarged in its scope this year, with marked results in the evidence of better understanding of structural form by students of the drawing classes.

E. Spencer Macky, Dean of the Faculty and Professor of Painting and Drawing, reorganized the work of the night school of which he has supervision, bringing closer harmony into the different branches of study. The night school now has an average attendance of one hundred and twenty-five students, and has unlimited possibilities for future development.

The course in *Design and Applied Art* under Rudolph Schaeffer, Instructor of Design, was largely attended by teachers of the public and high schools of the Bay cities.

The students of sculpture under Ralph Stackpole, Professor of Sculpture, made an excellent showing at the close of the year, especially in single figure studies and in portraiture.

Respectfully submitted,

LEE F. RANDOLPH,

Director of the School.

COLLEGE OF COMMERCE

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the report of the Dean of the College of Commerce for the year 1920-1921:

The enrollment in the College of Commerce has grown from three hundred and seventy-one in the year 1917-18 and five hundred and twenty-two in 1918-19 to 1,191 in 1920-21. This three-fold increase has meant large and unwieldy classes, great pressure upon library accommodations, unusual calls upon the time of instructors, and, in general, the hampering of advanced work of all kinds. It is a puzzling task to provide proper specialized instruction for the students who now seek instruction in commerce, yet the reputation of the college depends upon its ability to continue to offer thorough courses in a representative number of fundamental business subjects.

The college needs money for the development of instruction in business organization, in foreign trade and in statistics. Since the appointment of Lincoln Hutchinson, Professor of Commerce on the Flood Foundation, as Commercial Attaché for the United States Government at London, there has been no one at the University especially interested in instruction in foreign trade. The field of statistics has likewise suffered by the selection of F. R. Macaulay, Assistant Professor of Economics, to take charge of the National Bureau of Economic Research at New York. No courses in business organization have been offered during the current year. This subject is of great importance to students in a College of Commerce, and the demand for courses in the field should be met promptly.

In addition to the need for new courses in business subjects, there are three other directions in which the facilities of the college should be increased.

There is urgent necessity for a larger library equipment. The total allotment of the Department of Economics for the purchases of books in 1920-21 was only \$632. Only a portion of the amount was available for the purchase of books in business subjects. The library has no adequate files of trade periodicals and finds it difficult even to keep supplied with the more important books. Sums of any size, large or

small, can be spent profitably in the enlargement of library resources.

The college needs funds for business research, including the tabulation and making available of trade statistics. The College of Commerce should be a center where authoritative information of certain types can always be found, and it should be continuously engaged in investigations of special interest to business men upon the Pacific Coast. Among possible subjects for investigation may be mentioned the trade and manufacturing possibilities of special sections of the state, price movements, unemployment, and the effect of tariff and transportation legislation upon California industries. Much can be done at a comparatively slight cost by the appointment of research fellows at salaries of \$1800 or \$2000 each. These fellows could work with adequate clerical assistance under the direction of older members of the University faculty. The immediate call is for a research fellow in labor, one in business organization, one in the real estate field, and one in advertising.

The third pressing demand of the College of Commerce is for a building in which its activities can be concentrated. A Commerce Building not only would facilitate the administration of the college by providing sufficient quarters for the Dean, but also would create a sense of unity and promote a professional spirit among the students. There have been nine hundred and thirty-eight men and two hundred and fifty-three women enrolled in the college during the past academic year. These students have had no central meeting place, no accommodations for their societies or publications, and no place for the reception of business men who have come to Berkeley to address them, except such as have been found in scattered University halls or in fraternity or sorority buildings. It should be said that the leading spirits among the students have worked manfully during the past ten months to develop a community spirit in the commerce group. However, the handicaps under which they have labored have been great, and their success less than could be desired.

Attention is called to the redefinition of the faculty of the College of Commerce approved by the Senate on February 14, 1921. It is hoped that the new organization of the faculty will promote a wider interest in the affairs of the college on the part of the University at large.

Respectfully submitted,

STUART DAGGETT,
Dean of the College of Commerce.

COLLEGE OF DENTISTRY

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of the College of Dentistry for the year 1920-21:

The total number of students registered during the year was three hundred and twenty-eight, of which one hundred and thirty-four were first year students. This represents an increase of forty per cent over the session of 1919-20, and an increase of ninety per cent over the session of 1918-19. Included in the number were nine transfers registering with advanced standing from other schools; and one graduate student from Ghent, Belgium, pursuing advanced work under the auspices of the Belgium Relief Commission.

This greatly increased enrollment represents increased demands for dental service, as well as a desire on the part of students to qualify for such service. The facilities of the department, including rooms, equipment, and teachers, were taxed beyond the limit, and some definite provision must be made within the very near future if the needs of the State are to be met.

Student activities have been concentrated in an effort to establish a coöperative store, lunch room, and recreation center which will serve to bring students together for the purpose of stimulating an interest in athletics and other student activities. The student body voluntarily contributed \$1065.72 toward the erection of a building for such purposes and has expressed a continued interest in the support of these plans and other similar activities. It is hoped that a temporary building will soon be erected on the campus.

With the increase in registration, teaching problems have arisen. The unusual opportunities in civil practice together with the limited inducements offered to teachers constantly serve as a menace to efficient and reliable accomplishment in teaching dentistry. Unless these conditions are modified and the dental teacher's position made more attractive, the teaching and the practice of dentistry will suffer by reason of the lowered standards.

Faculty changes for the year included the resignation of Dr. W. F. Sharp, Professor of the Principles and Practice of Surgery, and his appointment as Professor Emeritus of Prosthodontia. Dr. Sharp has rendered continuous service in the College of Dentistry for thirty years. It has been his privilege to have known intimately every person connected with it during its active history, and to have shared actively in promoting its growth and development during this long period of service. Other changes in the faculty include the resignations of Dr. Herbert T. Moore, Lecturer in Surgery, a member of the teaching staff since 1904; of Dr. B. Frank Gray, Instructor in Orthodontic Technique; and of Dr. Malcolm Goddard, Instructor in Comparative Odontology.

Dr. M. Thayer Rhodes, Assistant Professor of Operative Dentistry, was granted a leave of absence for one year; Dr. H. B. Carey was promoted to Assistant Professor of Anatomy, Materia Medica and Therapeutics; and Dr. Henley E. Miller was appointed Instructor in Surgery and Visiting Dental Surgeon at the San Francisco Hospital.

Drs. J. L. Campbell, T. R. Sweet, A. M. Church, F. O. Hoedt and E. W. Snell, were added to the teaching staff as instructors. Dr. Arthur H. Nobbs was made Chief Instructor in Clinical Dentistry, full time service.

A plan to provide instruction in Anatomy, Physiology, Pathology, and Biochemistry for dental as well as medical students must be studied when consolidation of the Medical School shall have been effected. These subjects must be included in the dental curriculum, and while an additional quota of teachers may be required, if those now available are insufficient in numbers to meet the need, the plant and equipment can be so planned as to provide for all needs. The difficulties are not insurmountable. The duplication of plant, equipment and staff for two correlated departments on the same campus is unwise, and the need for instruction in each department is equally great.

Dr. John A. Marshall, Associate Professor of Biochemistry and Dental Pathology, has been active throughout the year on the following problems: Studies in Root Canal Sterilization; Part I dealing with histology; Part II dealing with technique and action and penetration of certain dyes on tooth structure; and Part III dealing with bacteriology. Grants for this work included \$500.00 from the Research Commission of the National Dental Association, and \$440.00 from the University.

Legislation in dentistry during the past session of the Legislature included among other constructive bills, provisions for licensing the dental hygienist by the State Board of Dental Examiners for a limited field of practice under the supervision of a dentist. This activity represents a forward step in public health and preventive medicine. The College of Dentistry approved the measure and since the legal stand-

ards must conform to the instruction given in the University of California, the College of Dentistry will reorganize its course of instruction and matriculate students at the opening of the next regular term.

It has been the policy of the college to give freely such information and assistance pertaining to dental problems as it might, to state institutions, public schools, professional organizations and to the public when called upon to do so. Lectures and exhibits represent the major part of this service.

The chief need of the College of Dentistry is a new building adequate to house its present student body and with provisions elastic enough to permit of a gradual expansion in terms of increasing attendance, at the same time affording opportunity for the utilization of the whole plant during the entire year. Such a plan will do away with the present method of temporizing by adding yearly to present inadequate quarters and equipment at large expense.

Respectfully submitted,

GUY S. MILLBERRY,

Dean.

EXAMINER OF SCHOOLS

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of the work of the Committee on Schools for the year 1920-21:

The work of this committee, which is charged with the duty of visiting and accrediting high schools, has been especially difficult this year because of the regrettable illness of W. S. Thomas, Assistant Professor of Education, for many years Examiner of Schools and Chairman of the Committee on Schools. Deprived of the benefit of Professor Thomas' remarkably extensive and intimate knowledge of the schools, the committee was forced to organize its work anew. It was no slight task merely to locate geographically the schools applying for accrediting and to plan a schedule for visiting which should be as economical as possible in regard to both time and expense. The work of organization has now been accomplished. We have installed a cataloguing and filing system which enables us to plan our work systematically and to carry on our correspondence effectively.

During the past year twenty-two members of our faculty, including the members of the committee, participated in the work of school visiting. While the inspection is of a general character, and visitors are not chosen primarily with reference to the subject they teach, nevertheless the list of visitors included specialists in the leading academic branches taught in high school: English, foreign languages, history, mathematics, and natural sciences. Unfortunately, as has been the case since the war, it was not found possible to visit all the schools applying for accrediting. In some cases it was found necessary to omit schools which had especially requested a visit. However, neither effort nor expense was spared where the failure to visit would entail the rejection of an application. The committee considered it to be its first duty to visit the unaccredited schools. Next year we hope, with the aid of a much needed increase in our budget allowance, to be able to resume the custom of visiting practically all the schools applying for accrediting.

Whether with good reason or not, scholarship requirements were almost universally relaxed during the war and after it. The repeated epidemics of influenza added to the demoralization. It was only natural,

too, that the schools should be affected by the spirit of instability and discontent that prevailed generally after the war. There was everywhere a demand for immediate results and an over-emphasis of the practical that threatened to ignore the future in the short-sighted pursuit of the present. In the high schools, as in the universities and colleges, there is gratifying evidence of a return to more normal conditions. Students preparing for college are held to better standards of performance. More attention is being paid to the content of high school programmes, and the tendency to sacrifice a well-rounded preparation in fundamental subjects to the exigencies of programme-making or to the temptation to seek the easier way is being somewhat curbed. Some of the schools have inaugurated really excellent advisory systems for college preparatory students.

The school visitors have paid particular attention this year to the problem presented by the unsatisfactory scholarship records of so many freshmen. The visitors have discussed this matter with the principals and advisers, and together they have studied the high school and university records of the students who have failed to maintain a good standing during their first semester at the University. Without going into details, and without attempting to apportion responsibility, it is fair to say that both schools and the University can contribute to the solution of the problem. Some of the high schools need to exercise more discretion in recommending. While the present plan of admission has the advantage of elasticity, the standard required for recommendation should be fully as high as that required under the former plan. While the University maintains no requirement of stated matriculation subjects in addition to the uniform requirements for high school graduation established by authority of the State Board of Education, it is nevertheless necessary that students come to the University equipped for the work they will have to do. The high schools should devote a great deal of attention to the programmes of their college preparatory students. For success in the University, moral stamina is needed no less than intellectual ability. Students who have not learned the lesson of self-control, and who will work only when watched; students who, in high school, have to repeat courses in order to obtain recommendable grades; students who drift from school to school—these classes account in large measure for the heavy percentage of failure in freshman courses. But the University also can do much to help. We can improve our facilities for instruction in the Lower Division. Students should not find it impossible, by reason of over-crowding, to get into courses for which they are qualified, and which they need to take. Older and more experienced professors should participate to a greater extent in freshman instruction. Some effort should be made to render the transition from the methods of high school to those of university teaching a little less

abrupt. Everything possible should be done to restrict over-indulgence in so-called "university activities."

In response to legislation, federal and state, the high schools have taken up the task of giving training to a large number of young people who have hitherto not attended high school, and this has necessarily resulted in a further extension of the high school curriculum. As a result, the conviction seems to be gaining ground among the principals that there must be more, and sharper differentiation between curricula. This is a movement which will make for the better training for college preparatory students, as well as for the other groups.

The list of accredited schools has been published separately and has been distributed. While there are changes in the standing of individual schools, the results, on the whole, present little variation as compared with those of last year. The number of schools applying for accrediting was precisely the same in the two years. This year three hundred and thirty-three schools were accredited, as against three hundred and thirty-two last year. The number of accredited private schools is the same for the two years, but there is a gratifying increase in the proportion of private schools in Division A of the accredited list.

The need at present is neither for any additional legislation, nor for modification of existing legislation, governing recommendation and admission. As has been pointed out, the present plan has the advantage of elasticity: it allows candidates to be dealt with individually rather than according to hard and fast rules. The University and the schools must study individual cases of success and failure, and learn from experience what constitutes the best preparation for college, and what qualities go to make up the successful college student. We believe that substantial progress in this direction has been made already, and for this progress credit is due to the principals and high school teachers who have loyally accepted an important responsibility.

Respectfully submitted,

CLARENCE PASCHALL,

Chairman of the Committee on Schools.

UNIVERSITY EXAMINER

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit herewith the report of the University Examiner for the year 1920-21:

The total number of new undergraduate students admitted to the University, August to December, 1920, was 3320, distributed as follows:

CALIFORNIA:		OTHER STATES:	
High Schools	1,707	High Schools	325
Private Schools	169	Private Schools	68
Normal Schools	84	Normal Schools	45
Southern Branch	41	Junior Colleges	2
Other Junior Colleges.....	116	Colleges	458
Colleges	190	By Examinations	16
By Examinations	12		
<hr/>		<hr/>	
Total from California.....	2,319	Total from Other States.....	914
		OTHER COUNTRIES	87
		GRAND TOTAL	3,320

The Board of Admissions, in the year just closed, has endeavored to maintain a uniformly high standard in the admission of new students to the University, both as regards general preparation and excellence of individual scholarship.

In the case of the California high schools the Board has aimed to support the enforcement of any rules adopted for the purpose of maintaining proper scholarship standards as a condition for the recommendation for admission to the University of California without examination.

Admission without examination was recommended by the Board in case of graduation from approved high schools in other states only when the scholarship average was well above the mark required by the school for promotion or graduation. The scholarship record in at least three-quarters of the programme should show a grade of at least ten points above the passing mark, particular importance being attached to the record of the last year in school. Wherever the scholarship record fell below this standard, or the programme of study did not meet the California State Board requirements for high school graduation, admission was conditioned upon the passing of a group of matriculation examinations. In

the assignment of examinations, attention was also paid to the record made in the University of California by students transferring from the same school the previous year.

	Number of Students	Number of Students Making Unsatisfactory Record	Percentage of Satisfactory Students
California High Schools.....1919	1,636	581	65
Outside High Schools.....1919	388	149	62
California High Schools.....1920	1,503	587	61
Outside High Schools.....1920	272	94	65½

It should be borne in mind in studying the above table that while the Board of Admissions is charged with the admission of students from accredited California high schools, the list of accredited schools is prepared by the Committee on Schools. Admissions from high schools outside of California are entirely in the hands of the Board, and the possibility of increasing the number of examinations set as a condition for admission as an immediate check on the performance of students from outside high schools gives flexibility to the procedure and is undoubtedly responsible for the larger percentage of satisfactory students received from this source.

Previous to August, 1920, all applications for admission to special status were referred to the deans of the colleges concerned for recommendations regarding the conditions for admission. Entrance examinations were assigned only in a small percentage of cases. An analysis of the special student admissions August to December, 1920, showed that most of the unsatisfactory scholarship records were made by students who were admitted without examination. In the Colleges of Commerce and Engineering not one of the students admitted by examination failed to make satisfactory records in the University. As shown by the table below more than one-third of the applicants failed to appear for the assigned examinations. This fact seemed to indicate willingness to take the examinations a satisfactory test of the applicant's seriousness of purpose. On this account the Board of Admissions, with the approval of the deans of the various colleges, inaugurated a system of group examinations for admission to special status.

Number of special applications considered August-December, 1920.....	249
Number of applicants assigned examinations.....	200
Number failing to appear for examinations.....	74
Number rejected on examination	30
Number admitted	*145
Number disqualified in December, 1920.....	27

* Includes 33 Public Health Nurses, and 16 others also admitted without examination.

No funds were available for the visiting of the junior colleges during the last academic year. Recent legislation favorable to the development of the junior colleges will undoubtedly lead to the organization of many new institutions and increase their enrollment. How best to coöperate with these new and growing institutions to assist them in securing adequate equipment and in organizing instruction of a high order, is our greatest present problem.

Respectfully submitted,

RALPH S. MINOR,

University Examiner.

UNIVERSITY EXTENSION DIVISION

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor of presenting herewith the eighth annual report of the Extension Division, covering the academic year 1920-1921.

That the Extension Division is fulfilling an educational need among the people of California is attested by the constantly increasing numbers of citizens who take advantage of the facilities offered by this branch of the University of California. The amount of service rendered during the last two years is indicated in the following table:

PEOPLE SERVED		
	1919-20	1920-21
Department of Class Instruction, enrollments.....	12,793	15,793
Department of Correspondence Instruction, enrollments.....	3,522	4,522
Department of Lectures, auditors	107,539	190,539
Department of Visual Instruction, spectators	308,613	452,613

SUMMARY OF THE EXTENSION DIVISION STAFF

	1919-20	1920-21
Administrative officers	11	11
Assistants to Administrative officers.....	25	26
Extension Division teachers	132	161
Extension Division readers	41	48
Other assistants in instruction	12	
Lecturers	100	150
Total	321	396

NEEDS

The outstanding needs of the Extension Division are:

1. Adequate offices on the campus of the University at Berkeley.
2. Branch offices at Sacramento and Fresno.
3. A traveling organizer for the northern and central parts of the State. Southern California is already being served.
4. Suitable classrooms and lecture halls in the large cities of California, especially in San Francisco and Los Angeles.
5. Additional class and correspondence courses adapted to the needs of working men and working women.

COMPARISON RECEIPTS AND EXPENDITURES
1919-20; 1920-21*

	RECEIPTS		EXPENDITURES	
	1919-20	1920-21	1919-20	1920-21
Classes (North & Central)....	\$ 50,281.30	\$ 63,000.00	\$ 52,677.34	\$ 57,500.00
Classes (South)	23,417.50	38,000.00	25,060.90	40,500.00
Correspondence	15,487.95	20,000.00	18,787.73	22,500.00
Lecture (North & Central)	10,706.96	6,100.00	14,833.72	12,000.00
Lecture (South)	6,265.68	7,000.00	9,365.37	11,500.00
Visual	1,265.74	2,500.00	3,476.88	5,000.00
Berkeley Office			13,969.79	13,000.00
Los Angeles Office			7,075.71	8,000.00
Stockton Office			413.06	250.00
San Diego Office			437.90	600.00
San Francisco Office			5,744.50	6,000.00
Supervision Music			1,585.03	1,600.00
Supervision Technical			4,678.79	3,000.00
Supervision Labor				20.00
Miscellaneous	3,711.91	1,800.00	1,267.51	650.00
State Appropriation	50,000.00	50,000.00		
Total	\$161,137.04	\$188,400.00	\$159,374.23	\$182,120.00

CORRESPONDENCE INSTRUCTION

The Department of Correspondence Instruction, during the year, has had 4033 enrollments which is a gain of 511 over the year 1919-20. This medium of University Extension is well suited to the needs of persons who, for any reason, cannot attend classes.

The growth of the work by years is shown as follows:

1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21
1871	2217	2450	2456	2835	3522	4033

The following list indicates the extent of territory within the state covered by the work of the Correspondence Department. The figures show, not the number of enrollments, but the number of different persons enrolled during the year:

ENROLLMENT BY COUNTIES

	1919-20	1920-21		1919-20	1920-21
Lameda	369	440	Contra Costa	44	51
Alpine	---	---	Del Norte	2	2
San Jador	8	9	El Dorado	1	3
Butte	18	18	Fresno	61	73
Claveras	1	5	Glenn	14	8
Colusa	1	12	Humboldt	25	27

* Month of June is estimated.

	1919-20	1920-21		1919-20	1920-21
Imperial	15	16	San Bernardino	27	23
Inyo	8	9	San Diego	60	58
Kern	50	61	San Francisco	400	490
Kings	13	13	San Joaquin	38	62
Lake	---	2	San Luis Obispo.....	15	16
Lassen	8	9	San Mateo	26	14
Los Angeles	262	295	Santa Barbara	24	23
Madera	7	15	Santa Clara	77	82
Marin	38	38	Santa Cruz	5	15
Mariposa	3	3	Shasta	6	12
Mendocino	14	23	Sierra	3	8
Merced	11	16	Siskiyou	15	22
Modoc	7	8	Solano	50	51
Mono	4	2	Sonoma	27	24
Monterey	17	29	Stanislaus	23	38
Napa	37	12	Sutter	2	5
Nevada	15	10	Tehama	6	6
Orange	20	24	Trinity	4	3
Placer	15	21	Tulare	25	33
Plumas	11	7	Tuolumne	7	8
Riverside	13	27	Ventura	14	14
Sacramento	60	59	Yolo	18	16
San Benito	2	5	Yuba	9	16

CLASS INSTRUCTION

	1919-20		1920-21	
	North	South	North	South
Number of classes	331	220	430	280
Number of enrollments	6510	5463	7866	7613
Number of teachers	75	43	100	46

CLASS ENROLLMENTS BY SUBJECTS

1920-21

Subject	North	South	Subject	North	South
Drawing, Freehand	62	91	Latin		
Drawing, Mechanical	26		Italian	72	
Art		33	Russian	29	
Education	277	473	Chinese	53	
Philosophy	9	26	Japanese	41	
Psychology	41		Mathematics	195	40
English	823	1200	Music	182	68
Journalism	542	127	Science	370	329
Public Speaking	896	881	Public Health	24	87
History	24	518	Economics	1015	1111
Law	142	37	Technical	974	55
Political Science		128	Home Economics....	464	
Spanish	625	555	Interior Decoration	802	1070
German			Community Service		180
French	178	605			
			Total	7866	7613

CLASS INSTRUCTION (NORTH)

The work of this department has not been confined to the Bay cities. Eight classes in interior decoration were conducted in Sacramento, Stockton, Fresno and San Jose; classes in city planning and in education in Sacramento; a class in commercial law in Modesto; classes in public speaking in San Jose and Stockton; and classes in French, English, and history in Menlo Park.

LECTURES (NORTH)

During the year 1919-20, 276 lectures, thirty-two concerts, and seven readings were delivered, making a total of 315. During the year 1920-21 there were delivered 221 lectures, twenty-three concerts, and fourteen readings, making a total of 258. This service was performed by forty-two members of the faculty, sixteen other lecturers, and sixteen musicians.

Outstanding features in the year's work are the following:

Lectures on health education by Dr. J. Mace Andress of Boston.

Child health lectures and conferences by Miss Anne Raymond, Associate Director of the Child Health Organization of America.

Lectures on foreign affairs by Colonel Charles W. Furlong.

A series of five lectures on psychology by Professor George M. Stratton.

At the San Francisco Public Library three groups of lectures were offered to the public without charge. Two of these announced under the title of *Our Roman Heritage* consisted of ten lectures delivered by members of the Latin Department. The third group was presented by Dr. John Adams Scott, of Northwestern University.

One of the most interesting pieces of work carried on by this department was a series of five lectures and five recitals arranged for Upper Lake, a small community in Lake County. The attendance exceeded the population of the town, which is explained by the fact that country people attended these lectures and concerts in large numbers. These engagements were filled by some of the best speakers and best musicians on the Extension Division staff.

About thirty-five commencement addresses were supplied to high schools. The Le Conte Memorial Lectures, delivered in the Yosemite Valley, included the following speakers and subjects:

I. ROBERT GRANT AITKEN, Astronomer, Lick Observatory.

Some Problems of Modern Astronomy.

1. The Solar System.
2. The System of the Stars.
3. The Nebulae.

II. THOMAS FREDERICK SANFORD, Associate Professor of English, University of California,

California and Its Makers of Literature.

1. The Argonauts. Bret Harte, Mark Twain.
2. The Bohemians. Ambrose Bierce, Charles Warren Stoddard, George Sterling, Joaquin Miller, John Muir, Robert Louis Stevenson.
3. The Romancers. Helen Hunt Jackson, Gertrude Atherton, Harry Leon Wilson, Stewart Edward White, Frank Norris, Jack London.

- III. JOHN CAMPBELL MERRIAM, President of the Carnegie Institution, Washington, D. C.,

The Philosophy of Joseph Le Conte.

1. Le Conte Philosophy of Evolution.
2. Application of Le Conte's Philosophy to Religion.

- IV. RULIFF STEPHEN HOLWAY, Professor of Physical Geography, University of California,

Evolution of Scenery in the Sierra Nevada.

1. Uplift of the Mountain Block and Subsequent Erosion.
2. Characteristics of Some Typical Canyons and Valleys.
3. Scenery of the High Sierra—Past and Present Glaciation.

LECTURES (SOUTH)

During the year 1919-1920, 239 University Extension lectures and concerts were delivered. During the year 1920-1921, the number was 298. These lectures and concerts were delivered by forty-seven different persons in thirty-nine cities and towns. Of the lectures, seventeen were delivered by persons connected with the University of California faculty at Berkeley. The others were delivered by persons connected with the faculty of the Southern Branch of the University of California at Los Angeles and of other educational institutions.

TECHNICAL DEPARTMENT

The Technical Department, which includes within its plan of work both extension classes and correspondence instruction, conducts courses more or less closely related to the field of engineering. Fifty-one classes were organized during the year, excluding mathematics classes, with enrollment forty-one per cent larger than that of the preceding year. Instruction in the following new subjects will be offered next fall: Aeronautics, advanced; reinforced concrete, advanced; petroleum engineering; practical telephony; wireless telegraphy and telephony.

The correspondence courses conducted by this department show enrollment for the year of nearly nine hundred. Over one-fifth of the enrollments are from men in California state prisons. The department is engaged in the preparation of new courses (some of them being already completed) in the following subjects: Mineralogy; surveying; materials of engineering construction; geology; map reading; physics; shop mathematics.

VISUAL INSTRUCTION

The Department of Visual Instruction is engaged in circulating stereopticon slides and motion picture films. Two years ago approximately fifty schools and churches in the state were equipped for the use of motion pictures; today they number over seven hundred. It seems like

COMPARATIVE REPORT FOR THE YEARS 1918-1919; 1919-1920, AND 1920-1921, ILLUSTRATING THE INCREASE IN THE USE OF MOTION PICTURES AND SLIDES AMONG THE SCHOOLS AND CHURCHES FOR THREE YEARS.

Month	Motion Pictures			Slides			Number of People Reached		
	1918-19	1919-20	1920-21	1918-19	1919-20	1920-21	1918-19	1919-20	1920-21
July	0	73	134	0	12	6	0	8,700	14,008
August	10	84	140	0	4	13	2,300	6,095	9,978
September	33	129	170	2	12	19	5,415	10,555	16,937
October	24	195	307	1	42	68	2,575	27,895	37,791
November	12	225	340	0	59	64	1,600	28,684	45,308
December	19	229	305	3	53	57	1,690	26,126	35,510
January	39	344	366	13	71	63	8,118	40,760	43,527
February	86	291	396	25	61	55	13,745	32,803	53,877
March	167	309	439	56	61	56	16,918	37,642	62,088
April	142	324	392	56	60	76	17,054	37,759	50,928
May	206	302	406	45	55	63	32,793	36,594	47,901
June	100	228	214	20	35	41	10,000	21,752	27,735
	837	2733	3609	221	525	581	112,208	310,365	445,588

A total of 2564 programmes was distributed in 1920-1921 as compared with 1319 in 1919-1920.

Motion pictures and slides were distributed to organizations as follows:

	1919-20 1920-21	
Universities and Colleges	4	6
High Schools	69	79
Elementary Schools	45	80
Private Schools	10	12
Churches	67	124
Y. M. C. A.'s	11	19
Farm Bureaus	0	19
Clubs	11	28
Miscellaneous	35	51
	252	418

that in the near future almost all high schools and large elementary schools will be so equipped, both for purposes of entertainment and illustrating the subject-matter presented in the classroom. Churches more and more introducing into their organizations the features of community center, offering programmes of motion pictures for purposes of entertainment and instruction. They are increasingly relying on the department for aid.

During the year new materials have been acquired illustrating literature, history, geography and science. The circulation of motion pictures has increased in the last twelve months approximately thirty per cent. An average of 400 bookings a month has been made with equipment of about one hundred and sixty-five pictures. At present California is the second state in the Union in the use of motion pictures among schools, churches and community centers.

Respectfully submitted,

LEON J. RICHARDSON, Director.

GRADUATE DIVISION

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit my report on the Graduate Division for the academic year 1920-21:

Attendance.—The total registration of graduate students for the last five successive years was 1092, 931, 603, 1127, and 1206, including 16, 4, 6, 17, and 9, admitted to study in absence. The fluctuation in these figures is due to the War. Of the 1076, 927, 597, 1110, and 1197 resident students, 55, 75, 57, 145, and 109 either failed to file study-cards or withdrew. The remaining 1021, 852, 540, 965, and 1088 were distributed as follows:

Professional Schools	1916-17	1917-18	1918-19	1919-20	1920-21
Architecture	18	7	4	9	9
Education (not including students in the School of Education with a first major in other subjects)	93	93	68	183	135
Jurisprudence	88	47	53	107	111
Medicine (students who take the first or second year at Berkeley in graduate standing)	37	53	18	39	50
Total	236	200	143	338	305
Percentage	23.1	23.7	26.5	35.0	27.5

Modern and Ancient Languages and Literatures.

English	101	95	48	70	90
German	46	34	15	16	12
Greek	3	3	1	1	5
Latin	30	25	16	20	16
Oriental Languages	2	3	1	4	0
Romanic Languages	45	58	31	51	....
French .....	....	....	....	....	31
Spanish .....	....	....	....	....	25
Semitic Languages	1	1	1	0	0
Slavic Languages	4	3	2	5	7
Celtic .....	....	....	1	0	0
Total	232	222	116	167	186
Percentage	22.7	26.2	21.5	17.3	16.8

Natural and Allied Sciences.	1916-17	1917-18	1918-19	1919-20	1920-
Agriculture	63	34	12	36	48
Anatomy	4	3	1	7	6
Anthropology	5	6	2	3	8
Astronomy	7	3	3	5	8
Biochemistry	7	3	2	4	6
Botany	18	20	10	9	13
Chemistry	43	32	18	30	48
Engineering	13	5	13	18	32
Geography	4	1	3	3	3
Geology	10	8	4	7	12
Hygiene	6	7	2	3	1
Mathematics	40	29	15	24	32
Mineralogy	2	1	0	0	6
Palaeontology	3	3	0	4	6
Pathology and Bacteriology	3	10	8	3	14
Physics	24	11	4	11	21
Physiology	8	7	5	11	8
Public Health	7	6	2	2	5
Research Dentistry	---	---	---	---	1
Research Medicine	---	---	---	---	7
Zoology	21	29	20	21	33
Total	288	218	124	201	318
Percentage	28.2	25.8	23.0	20.8	28.7
Other Subjects.					
Drawing and Art	13	13	11	8	8
Economics (including Commerce and So- cial Economics)	65	41	22	53	91
Household Art and Science	30	25	20	13	---
Household Art	---	---	---	---	11
Household Science	---	---	---	---	12
History	81	76	55	102	89
Library Science	---	---	2	6	5
Military Science	---	---	---	---	1
Music	3	3	2	6	8
Philosophy	31	26	12	21	22
Psychology	6	4	9	14	16
Physical Education	9	6	12	14	9
Political Science	16	10	8	17	23
Public Speaking	11	2	3	5	2
Social Institutions	---	---	---	---	2
Total	265	206	156	259	299
Percentage	26.0	24.3	29.0	26.9	27.0

In former reports the first group was designated as "Professional Schools and Colleges," and in addition to Architecture, Education, Jurisprudence, and Medicine, included students majoring in Agriculture, Chemistry, Commerce, and Engineering. Except in the professional cu

ricula of the schools, organization of graduate work is by departments. It has therefore appeared advisable to list Agriculture, Chemistry, Commerce, and Engineering in the departmental groups.

The designation "Commerce" has been omitted in favor of the general designation "Economics" which includes students in Social Economics and in Commerce.

The exact enrollment in the School of Education has been difficult to determine as some candidates for the High School Teachers' Recommendations, with a first major other than Education have not designated Education as a major. With the development of a definite system of enrollment of graduate students in the School of Education it will be possible hereafter to give more accurate statistics for the School of Education.

As a rule, students with more than one major have designated only the first major but a number of duplications occur when two majors have been stated. On this account the total number of majors in all subjects exceeds the total number of students by twenty.

In addition to the registered students, a number of accepted candidates for higher degrees continued their studies under the direction of the University during temporary absence.

The percentage of women which had steadily increased to 60.2 in 1918-19 has receded to 48.0, as shown by the following figures:

	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21
Percentage	44.8	47.1	51.3	58.1	60.2	48.8	48.0

Institutions Represented.—The classification of graduate students according to the institutions from which they had received degrees was as follows:

	1919-20			1920-21		
	No. of institutions	No. of students	Percentage of students	No. of institutions	No. of students	Percentage of students
University of California	1	579	60.0	1	653	60.0
Other California institutions.....	9	81	8.4	12	80	7.4
Other institutions west of the Rocky Mountains	14	51	5.3	19	59	5.4
Middle Western institutions	58	147	15.2	64	156	14.4
Eastern and Southeastern institutions....	37	76	7.9	47	93	8.5
Foreign institutions	27	31	3.2	38	47	4.3

The total number of institutions represented for six successive years was 207, 175, 128, 87, 146, and 183. The fluctuations in these figures show the effect of the War on the migration of graduate students.

Candidates for Higher Degrees and Degrees Conferred.—The number of accepted candidates for higher degrees, the number of degrees conferred and the number of recommendations for high school teachers' certificates issued by the University have been as follows:

	1918-19		1919-20		1920-21	
	Candi- dates	Degrees conferred	Candi- dates	Degrees conferred	Candi- dates	Degrees conferred
M.S. and M.A.	256	71	386	141	375	167
Gr. Arch.	3	0	3	0	1	0
Gr. Educ.	9	1	10	0	9	0
Gr. P.H.	0	0	0	0	0	0
J.D.	19	10	38	28	39	36
C.E.	2	0	2	0	2	0
Mech. Eng.	0	0	0	0	0	0
Min. Eng.	0	0	1	1	0	0
E.E.	0	0	0	0	0	0
Ph.D.	95	21	113	23	117	25
Total	384	103	553	193	545	228
High School Teachers' Recommendations	263	208	261	229	222	213
Grand Total	647	311	814	422	767	441

The number of candidates who either withdrew or were disqualified has been as follows:

	1915-16	1916-17	1917-18	1918-19	1919-20	1920-
M.S. and M.A.	22	24	25	23	86	32
J.D.	1	5	5	4	9	2
Ph.D.	3	13	12	7	8	22
H.S.T.R.	17	1	12	14	32	13
Gr. Arch.						1
C.E.						1
Gr. Educ.						1

Up to the present time the University has conferred a total of 268 degrees of Doctor of Philosophy. Of these 25 were conferred during the past academic year, as compared with 23 during the preceding year. The following table gives a comprehensive view of the past and present activities of departments in regard to graduate and research work leading to this degree:

	Total number Ph.D.'s conferred	Ph.D.'s conferred 1915-16	Ph.D.'s conferred 1916-17	Ph.D.'s conferred 1917-18	Ph.D.'s conferred 1918-19	Candidates Ph.D. 1919-20	Ph.D.'s conferred 1919-20	Candidates Ph.D. 1920-21	Ph.D.'s conferred 1920-21
Agriculture (all subdivisions)	12	3	3	0	1	5	1	5	2
Botany	0	0	0	0	0	2	0	3	0
Chronology	2	0	0	0	0	0	0	1	0
Geology	1	0	1	0	0	0	0	0	0
Geography	27	1	3	0	1	8	2	6	3
Geology	1	0	0	0	0	0	0	2	1
Chemistry	7	1	1	1	2	3	0	0	0
Physics	15	2	1	1	0	3	0	5	2
Ministry	34	5	4	3	3	4	3	10	5
Statistics	0	0	0	0	0	1	0	0	0
Economics	6	1	0	0	0	9	2	13	1
Education	6	0	1	0	0	8	1	10	2
Electrical Engineering	0	0	0	0	0	0	0	0	0
English	7	0	0	0	1	4	0	5	2
French	0	0	0	0	0	0	0	2	0
Geology	15	0	2	2	0	5	2	5	1
German	6	0	0	0	1	4	2	3	0
Hebrew	1	0	0	0	0	0	0	0	0
History	24	2	5	2	2	6	3	7	0
Law	0	0	0	0	0	0	0	0	0
Philosophy	0	0	0	0	0	1	0	0	0
Political Science	4	0	0	0	0	0	0	0	0
Statistics	1	0	0	0	0	0	0	0	0
Mathematics	19	2	1	3	1	3	1	7	3
Medicine	4	0	0	0	3	4	1	3	0
Modern Languages	0	0	0	0	0	1	0	0	0
Ontology	8	1	2	0	0	2	0	2	0
Psychology	2	0	0	0	1	3	1	0	0
Philosophy	6	0	2	0	1	1	0	2	0
Statistics	14	1	2	2	1	4	1	5	1
Geology	11	0	0	1	0	2	1	2	0
Physical Science	7	0	2	0	0	2	1	6	1
Psychology	0	0	0	0	0	1	0	5	0
Modern Languages	3	2	0	0	1	0	0	0	0
Old Languages	0	0	0	0	0	1	0	0	0
Geography	25	1	3	3	2	8	1	8	1
Total	268	22	33	18	21	95	23	117	25

Graduate Work in the Summer Session.—The relation of the Summer Session to the Graduate Division is indicated in the following table:

Year	Masters' degrees conferred	Enrolled in Summer Session	Percentage
1912-13	89	15	17
1913-14	119	19	16
1914-15	119	18	15
1915-16	149	27	17
1916-17	131	33	25
1917-18	95	28	29
1918-19	71	20	28
1919-20	141	43	30
1920-21	167	47	28

The figures presented in this report indicate that the Graduate Division has entirely recovered from the effects of the War.

Training of High School Teachers.—One thousand, three hundred and ninety-nine applicants received High School Teachers' recommendation in 4757 major or minor subjects in the six years from 1915 to 1921. In the same time the University conferred seven hundred and fifty degrees of Master of Arts and one hundred and forty-two degrees of Doctor of Philosophy. Of the recipients of the Masters' degrees, probably seventy-five per cent were teachers or prospective teachers. These figures would seem to indicate that by far the larger part of departmental graduate activities is devoted to teacher training through the medium of the School of Education. The distribution by subjects is indicated in the following table of totals of major and minor subjects:

Subject	Total	Subject	Total
Aeronautics	1	French	214
Agriculture	129	Geography	61
Agricultural Chemistry	1	Geology	5
Agricultural Education	1	General Science	1
Anatomy	10	German	218
Anthropology	43	Graphic Art	36
Architecture	10	Greek	25
Astronomy	14	History	618
Bacteriology	1	Household Art	95
Biochemistry	30	Household Science	53
Biology	1	Hygiene	82
Bohemian	1	Italian	5
Botany	87	Jurisprudence	28
Celtic	2	Landscape Gardening	1
Chemistry	61	Home Economics	1
Civil Engineering	8	Latin	169
Comparative Literature	1	Library Science	2
Drawing	29	Manual Training	1
Economics	306	Mathematics	165
Education	589	Mechanical Drawing	6
English	592	Mechanical Engineering	8

Subject	Total	Subject	Total
Military Science	5	Political Science	170
Mineralogy	3	Pomology	1
Mining	1	Psychology	10
Music	21	Public Health	1
Nutrition	5	Public Speaking	98
Oriental	8	Russian	2
Palaeontology	2	Sanitary Engineering	4
Pathology	12	Semitic	6
Philosophy	274	Slavic	3
Physical Education	54	Spanish	167
Physics	54	Stenography and typewriting.....	18
Physiology	60	Zoology	95

Arranged in numerical order the distribution of the subjects principally represented is as follows:

Subject	Total	Subject	Total
History	618	Zoology	95
English	592	Household Art	95
Education	589	Botany	87
Economics	306	Hygiene	82
Philosophy	274	Geography	61
German	218	Chemistry	61
French	214	Physiology	60
Political Science	170	Physical Education	54
Latin	169	Physics	54
Spanish	167	Household Science	53
Mathematics	165	Drawing	42
Agricultural subjects	138	Greek	25
Public Speaking	98	Music	21

The University does not control the student's choice of subjects. It is evident that there is an oversupply of teachers trained in History and English. Education and Philosophy, which are near the head of the list, are not part of a high school curriculum but undoubtedly greatly strengthen the professional training provided for by the required fifteen units in Education which all prospective teachers must complete. The demand for language teachers, including Latin, seems amply cared for. Mathematics and agricultural subjects are adequately represented. Zoology and botany head the sciences, which on the whole appear inadequately represented. The subjects emphasized in Normal Schools are naturally weak. It is of interest, however, that recent statistics prepared by Dr. Agnes Fay Morgan, Associate Professor of Household Science, seem to indicate that 24.8 per cent of the teachers in Home Economics in California High Schools have received their training in the University of California, while only ten per cent have been trained in all other California colleges or universities. The Normal Schools which specialize in this subject have furnished 35.3 per cent and the remaining thirty per cent have come from institutions outside of Cali-

fornia. The prominent place of the University of California in the training of teachers in Home Economics is particularly noteworthy in view of the fact that this subject has been in operation in the University only during the past five years.

Faculty Research Lecture.—Professor Charles Mills Gayley was honored by the Academic Senate with election as Faculty Research Lecturer for the year 1920-21. Professor Gayley chose for his subject *The Poetry of the War*, and delivered the Faculty Research Lecture on March 22, 1921, during Charter Week, in connection with the Charter Day exercises.

Hitchcock Lectures.—The Hitchcock Lectures for 1920-21 were delivered by Professor Jules Bordet of the University of Brussels. The dates and subjects of his lectures were as follows:

November 22—The Theories of Coagulation of Blood.

November 23—The Theories of Anaphylaxis.

November 24—Some New Results Relative to the Conflict of the Organism with “invading” Microbes.

Respectfully submitted,

A. O. LEUSCHNER,

Dean of the Graduate Division.

GREEK THEATRE

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to present to you a brief report of the activities of the Greek Theatre from October, 1918, when I assumed the duties of Director, to June 30, 1921.

Under the able management of my predecessor, the late William Dallam Armes, Associate Professor of American Literature, the theatre had become known to the world outside the University, not only as a notable architectural achievement, but as the impressive setting for the art of Sarah Bernhardt, Margaret Anglin, and others prominent on the stage of those years. The period prior to 1906 had seen the theatre used only for Class Day extravaganzas and University exercises, with the exception of two performances by the Ben Greet Players and one or two performances of Greek drama by the Greek Department under Dr. J. T. Allen, Professor of Greek. In the years from 1906, when Bernhardt's performance of Racine's *Phédre* placed the Greek Theatre definitely in the field of the commercial theatre, to 1918, the sphere of activity was widened appreciably and the University and the community were enabled to see productions in which some of the foremost actors on the stage appeared.

However, during this period when the theatre was developing into a booking agency for outside attractions touring the coast, there was not an equal development of productions high in literary merit presented by the students of the University or members of the community. The English Club presented an annual play, as did the Senior Class; these, together with the performances by students in the Greek and French departments constituted the native dramatic contribution.

Prior to the year 1918 the theatre had functioned only during the regular academic year. In 1916 it was turned over to the Summer Session for the six weeks period and students were admitted free to all performances. A considerable loss having been incurred through this arrangement, in 1917 and 1918 admission was charged for all performances and the revenue forthcoming was turned into the Summer Session budget.

Upon assuming the position of Director of the Greek Theatre in October, 1918, I found an organization ripe for advancement—one which

had a very definite contribution to make to the University, to the community, and to the State as a whole. It was with this in mind that we have consistently tried to expand the activities of the department until they shall embrace the highest and most significant expression of all the arts which are related to, or derive their inspiration from, the theatre. In order that such a programme might be carried out in the most orderly fashion, I deemed it advisable to turn over the business management of the department to the office of the Comptroller.

For the sake of unity and continuity the control of the theatre during the summer period was taken over from the Summer Session. This made possible a continuous programme of Half Hours of Music on Sunday afternoons during the open season in the theatre, March 1 to November 30, the six weeks during Summer School being filled by artists brought for that period to the Department of Music.

Further to supplement the work that was being carried on in the dramatic field, a definite programme of concerts and lectures was outlined and carried forward in spite of the influenza which, in the autumn and early spring, seriously affected our plans—a number of events already scheduled being canceled owing to the quarantine. However, the year saw not only performances by artists prominent in their respective fields, but also the inception of three movements which have been far-reaching in their effects.

The first of these was the inauguration of an annual Shakespeare Festival, participated in by the high school students of the entire State to the end that the rich vocal quality possessed by these students might be fostered and developed and that a deeper interest in and love for Shakespeare's poetry might be created. By competitive try-outs and by the awarding of prizes, this experiment was found to be of much benefit, and the interest stimulated in this way reacted to the advantage of the students. In 1920 the contest was enlarged by the addition of an Orchestral Competition, participated in by high school orchestras of the bay region, and in 1921 a Choral Contest for mixed choruses was added, making a three day festival. The representation grows larger each year and schools from Tehachapi to Dunsmuir send students to the Contest while the movement has gained the support of teachers of drama and oral English throughout the State.

In March, 1919, another experiment was undertaken, namely, the bringing to Berkeley of the San Francisco Symphony Orchestra for a series of three concerts in Harmon Gymnasium. Mr. Hertz, the director of the organization, entered heartily into the plan, the educational aspect of which appealed to him very strongly. The price of admission was placed within the means of students and the response from the Berkeley community to this first series of concerts was so encouraging that a fall series of four concerts was planned. The year following, 1920,

definite spring and fall season was undertaken, and the audience has grown steadily until the present time, when the largest audiences thus far have been attending the spring series.

In May, 1919, a performance of Verdi's opera, *Aida*, was given in the Greek Theatre. This was remarkable as being the first performance of grand opera ever staged in the Greek Theatre, and as being the precursor of a yearly event. *Samson and Delilah* was given in 1920, and *The Marriage of Figaro* is being planned for 1921. It is of interest to note in this connection that the majority of the voices for these productions were drawn from the neighboring cities and that the production as a whole was the work of local producers.

Aside from the many attractions offered in both the outdoor theatre and in Wheeler Hall during 1919, there were two more significant movements launched. One was the Armfield Exhibition of paintings and designs which was held in Architecture Hall during the latter part of July, and which carried forward the interest aroused by Armfield's performance of synthetic drama in The Greenleaf Theatre, in Wheeler Hall, the previous December. This exhibition was followed in October by a more pretentious exhibition of stagecraft which came directly from New York, and which was the first of its kind to be held on the coast. It comprised models and designs for stage decorations by all the leading designers for the stage in America, and it demonstrated as nothing else had done that there was a definite, living, movement toward a new art of the theatre. As shown at Architecture Hall the exhibit was augmented by plates and photographs belonging to me, and the interest was furthered by a demonstration of stage lighting on a plaster sky dome which was given every afternoon during the two weeks exhibition period. This exhibition was of great interest and benefit to all students who were giving time and thought to the various technical sides of the theatre, as well as to the theatre as an art expression.

In the autumn of 1919 the University Fine Arts Association was formed with the avowed purpose of bringing to the University public and to its members the outstanding figures in the lecture and concert field, and to further the growth of art appreciation on the campus by securing such worth while exhibitions as were within its means. In addition to the autumn symphony season, the San Francisco Chamber Music Society, the leading organization of its kind on the coast, came to Wheeler Hall under the Greek Theatre management for three concerts in October.

Other events during the year 1919 were as follows:

March 1—The French Army Band.

April 16—Diana Watts, in a Demonstration of the Movement of Greek Statues.

April 18—Stabat Mater.

April 23—Lucine Finch, in a Recital of Negro Songs and Stories.

May 10—Music Festival.

- May 15—Partheneia in the Greek Theatre.
 May 24—*Aida*.
 May —San Francisco Normal School Graduation.
 June 21—The Oratorio of *Elijah*, with Schumann-Heink.
 July 4—The Chant of Victory.
 July 9—The Pasmore Trio in a Chamber Music Recital.
 July 26—The Tudor Folk Dance Festival and the King's Progress.
 August 1 and 2—*Miriam and Moses*, written by Constance Smedley Armfield and enacted by Ruth St. Denis and Ted Shawn; music by E. G. Stricklen.
 August 6—Twilight Concert.
 August 25—Fleet Entertainment.
 August 30—*Orpheus*, the opera by Gluck.
 October 15, 22, 29, November 5—Series of Lectures on Drama by Members of the Faculty.
 November 11—American Syncopated Orchestra.
 November 19—Sousa's Band, afternoon and evening.
 December 21—Municipal Christmas Tree Celebration and performance of *Abraham and Isaac*.

The year 1920 witnessed a most encouraging stimulation of dramatic activity, both as regards the presentation of classic plays, adapted to the Greek Theatre stage, and of modern plays requiring a somewhat different technical treatment.

Beginning with the presentation in September and October of Shakespeare's Falstaff trilogy, *Henry IV, Parts, I and II*, and *The Merry Wives of Windsor*, the Greek Theatre stepped definitely out of its position as booking agency for outside attractions into the larger field of a producing organization equipped for the presentation of the highest type of drama in a manner fully in accord with the newer art of the theatre. Even more significant than the fact that these Berkeley performances marked the first consecutive production of the plays in the trilogy on any American stage, was the fact that the entire production was the work of student and community actors, that it was directed by local men (Mr. Pichel as my associate director, having definitely taken up his residence in Berkeley), and that the costumes and stage settings were the work of Rudolph Schaeffer and Norman Edwards, of the California School of Fine Arts. The performances amply justified the belief that there is here not only an admirable theatre for the presentation of classic drama but talent equal to the task of interpreting such drama in such a setting.

In order that the group who had been working together so earnestly in the Shakespearean plays might be held together during the closed season for the outdoor theatre, we sought for some indoor stage upon which modern plays could be produced. The only available place was the lecture platform in Wheeler Auditorium, an apron stage thirty feet long, ten feet wide at its center, and tapering to three feet at each end. Here, with the use of screens, curtains, and simple decorative panel sets, an invitational performance of Oscar Wilde's farce, *The Importance of Being Earnest*, was given in October. The reception accorded this

experimental production encouraged the giving of two additional performances, at which an admission of fifty cents was charged. The success of these evenings led to the presentation of a bill of one-act plays on the evening of the annual California-Stanford game. The attendance was the largest we had yet drawn, and made possible the undertaking of a more ambitious production, Ibsen's *Pillars of Society*, which was also repeated. At this time the audience was circularized with announcements of a spring series of six productions, season tickets for which were to be \$2.50 and single admissions fifty cents, without war tax. Each play was to be given two performances. On this occasion the nucleus of a spring audience was secured and plans were at once made for the expanded season. Thus at the close of the year 1920 the Wheeler Hall experiment definitely had been tied in with the same creative effort which had given to the University and to the community the Falstaff trilogy. This tie meant that under the same direction and maintaining the same high standard, a programme of production of the best in modern and classic drama had been brought into existence—a programme that covered the entire year.

Other events during the year 1920 were:

- April 24—The Second Annual Shakespeare Festival, including the Orchestral Contest.
- May ———San Francisco Normal School Graduation.
- July 10—*Richard III*—The Armes Memorial performance given by the Players' Club of San Francisco.
- July 29—*The Quest*, Sidney Coe Howard's Masque.
- August 26 and 28—*Samson and Delilah*, with Julie Claussen and John Hand.
- September 8, October 7—Alfred Kreymborg's Puppet Plays in Wheeler Auditorium.
- Ruth St. Denis Concert Dancers in the Bacchus Ballet from Massenet's opera, *Bacchus*—June 26.

LECTURES

- February 18—Granville Barker.
- March 19—Maurice Maeterlinck.
- April 15—Vachel Lindsay.

CONCERTS

- April 7, 14, 21—Tina Lerner.
- February 12, 19, 26; March 11; October 21, 28; November 4, 11—The San Francisco Symphony Orchestra.
- March 17, 25; and April 1—The San Francisco Chamber Music Society.
- March 20—Festival Concert to celebrate the Inauguration of David P. Barrows, President of the University.
- April 2—Stabat Mater.
- June 29—Recital by Dorothy Johnstone, Wheeler Hall.
- July 22—Paulist Choir.
- October 12, 19, 26—Beethoven Sonata Recitals by Sigmund Beel and George Stewart McManus (the first time on this coast that the whole series of Beethoven sonatas had been presented), Wheeler Hall.
- **Henry IV, Part I.*
- **Henry IV, Part II.*
- **The Merry Wives of Windsor.*

* With special dress rehearsals to which the students of the schools were admitted at a nominal charge of twenty-five cents.

The year 1921 has thus far been a distinct advance over the accomplishments of 1920.

In addition to carrying forward the significant movements of the two preceding years, such as the Shakespeare Festival, the fall and spring symphony seasons, the Wheeler Hall and Greek Theatre productions, and the usual opera, concert and lecture programme, four new endeavors were undertaken with the hope of increasing the practical value of the contribution the Greek Theatre as a department is making to the State through the University.

The first of these was the establishment of an Art Fund, made possible through generous donations from a Regent of the University, Mr. Wigginton Creed. In this way we were able to bring to Berkeley the work of certain contemporary artists who are making a significant contribution to the development of art in this country. Through the courtesy of John Galen Howard, Professor of Architecture, and Director of the School of Architecture, six exhibitions have been shown in the Architecture Building in the period since February 21, and several noteworthy exhibitions have been arranged for the fall semester. The collections have remained for either one week or two, depending upon the plans of the Department of Architecture. The attendance to date has been 5,080. The artists whose work has been shown include Winold Reiss, Bertram Hartman, Frank Brangwyn, Hermann Rosse, Theodore Criley and Wilhelm Kihn. The exhibitions have comprised paintings, etchings, watercolors, designs for the theatre, Indian studies and sketches in charcoal, supplemented by woodblock prints and batiks; the latter, splendid examples of the art by both Reiss and Hartman.

In order to stimulate creative work in drama among the playwrights of the State a Prize Play Contest, with an award of \$300.00, was announced in April. The contest will close October 1 and it is hoped that several plays worthy of production will be received by that time. The judges for this contest are to be two American playwrights, Susan Glaspell and Eugene O'Neill, and a dramatic critic, George Jean Nathan. The Greek Theatre agrees to present the winning play three times, paying the author a royalty of \$25.00 for each performance. In addition it retains an interest equal to 5 per cent of all subsequent royalties for a ten-year period. Additional productions for the play will, it is hoped, be secured. The prize for this contest was made possible through the generous interest taken in the project by members of the community.

Further to stimulate dramatic activity in the high schools and to organize the teachers having such work in their charge, so that the work might be carried on most effectively, arrangements were made through A. C. Olney, Commissioner of Secondary Schools, whereby the State Board of Education authorized the calling of a conference of drama teachers in the high schools of the State to be held at the University of

May 26, 27, and 28. In sending out the invitations, a questionnaire was inclosed requesting each school to give certain information as to the scope of dramatic activities in that school. The answers to these questionnaires provided a basis for practical discussion of existing conditions in the schools. Seventy-four delegates from schools in all parts of the State were present and organized the Drama Teachers Association of California, with the avowed purpose of promoting better drama and raising generally the standards of taste in the high schools and communities of the State, and of assisting teachers to secure good plays through the compilation of bibliographies graded to the needs of communities and students. The state was divided into geographical districts and a councillor appointed for each. A recommendation for the establishment of a standard for special certification of teachers of drama was passed, in response to a request from Mr. Olney.

For the interest of the delegates a special performance of *The Importance of Being Earnest* was staged by the Greek Theatre Players in Wheeler Hall, and the teachers were also the guests of the Greek Theatre at the performance of *The Jest* on the outdoor stage. The University library generously coöperated by placing on the shelf in the reading room books of plays and works on the drama for the delegates to consult. An exhibition of stage and costume designs was arranged from my collection and displayed in the Architecture Building. Lectures were given on stage decoration, mechanics, lighting, plays, organization, etc., by Gordon Davis, Gilmore Brown, Irving Pichel and Sam Hume, all men of experience in the theatre, and the many questions put by the delegates were discussed and answered. The Berkeley High School staged a demonstration of its production of *King Lear*, with the original music composed for it, and the Polytechnic High School in San Francisco invited the teachers to attend a performance of *The Merchant of Venice*. The Workshop Theatre of Fremont High School also was visited.

The spring Wheeler Hall season was a greater success than had been anticipated. Six modern plays were produced with actors chosen from among the students of the University and residents of the community, the repertory including several comedies to balance the more serious plays. Two performances of each play were given and an additional performance of the more popular. A short season in Piedmont was started as an expansion of the Wheeler Hall season, and single performances of the most popular plays in the repertory were given at Watsonville, San Jose, and Stanford University, as well as before clubs in Oakland and San Francisco.

In April and May of this year *Twelfth Night*, *Romeo and Juliet*, and Sam Benelli's Italian drama, *The Jest* (the latter, it is interesting to note, for the first time in America outside of New York) were presented in the Greek Theatre. These productions carried forward the programme

decided upon after the success of the Falstaff trilogy the previous autumn. Each of these productions was unique in its beauty of setting and lighting, its sincerity of acting, and its faithfulness to the tradition of the period represented. Not only has an artistic contribution been made to the community, but a store of costumes and other valuable properties has been acquired which is helping to build up an independent producing organization here in the University. The expenditures entailed by these productions are not properly to be considered as expenses for the three productions made this year, but should be looked upon as an investment for coming years of increased activity, and as an assurance which will place the Greek Theatre in a unique position among university institutions.

The Wheeler Hall series in the spring being an assured success, the time seemed ripe for a five weeks season during the Summer Session period. Announcements were sent out with the catalogues of the Summer School. The response was greater than had been anticipated. The plays thus far given have been received so well that it has been found necessary to give additional performances of some of them.

Supplementing the Wheeler Hall productions this summer there have been revivals of the spring productions in the Greek Theatre. *Romeo and Juliet* has already been given and *The Jest* and *Twelfth Night* are yet to be played.

Another conference of a somewhat different nature was undertaken in response to letters received from scattered art museums in this western district, all of which gave evidence of the need for coöperation among the various centers. After conferring with Mr. J. Nilsen Laurvik, the Director of the San Francisco Museum of Art, it was deemed advisable to invite all the directors and heads of museums on the coast to a conference to be held July 1 and 2 at the University of California and at the Palace of Fine Arts in San Francisco, respectively. The response to letters sent out justified such an undertaking, museums which could not send delegates expressing their full sympathy with and endorsement of the proposal. Seven delegates, representing Portland, Los Angeles, San Lake City, San Francisco, Oakland, and Berkeley, convened in the Library of French Thought, and organized the Western Association of Art Museum Directors. Officers elected were Mr. Laurvik, President, Mr. Bryan of Los Angeles, Vice-President, and Mr. Hume, Secretary-Treasurer. Definite plans were made for a traveling exhibition of the selected works of western artists, and a circuit was tentatively arranged which will start in January, 1922, and close in February, 1923. This will bring the exhibition to as many of the centers in this territory as can take it. Through the organization effected in this way more and better exhibitions at less pro-rata cost can be secured than under the previous arrangements whereby each museum undertook to bring out such exhibitions as

could afford, too often having to forego really significant work because of the excessive weight or high insurance. By authorizing its president to act as the Association's representative when he goes on to the National Convention of Museum Directors in the spring in the interests of his own museum, the West can be definitely recognized as a field to be considered in the routing of worth while Eastern exhibitions and the whole art interests of this territory thereby will be materially enriched.

Other events of the year 1921 have been:

April 2—Lada.

April 30—The Bolm Ballet, with the Little Symphony of George Barrere.

April 23—The New York Philharmonic Orchestra.

April 23—The Third Annual Shakespeare Festival, including an Orchestral and Choral Contest.

May 29—The Normal School Graduation.

CONCERTS

March 25—Stabat Mater.

March 15—Laurence Strauss and Stephanie Shehatowitch.

March 12—Gala Popular Concert by the Augmented Symphony Orchestra.

February 17, 24; March 3, 10—San Francisco Symphony Orchestra, Spring Series.

March 23—San Francisco Chamber Music Society.

March 22, 29; April 5—Beethoven Sonata Recitals by Sigmund Beel and George Stewart McManus, second performance in California of the entire series.

LECTURES

March 9—Olivia Rossetti Agresti.

March 30—Gregory Zilboorg.

GREEK THEATRE PRODUCTIONS

April 18, 30; July 16—*Twelfth Night*.

May 28; July 9—*The Jest*.

May 14; June 25—*Romeo and Juliet*.

WHEELER HALL PRODUCTIONS

Spring Series

Fanny's First Play, Bernard Shaw.

Change, J. O. Francis.

Wurzel-Flummery, A. A. Milne, with *If Shakespeare Lived To-day* (first time in America) and *Fame and the Poet*, by Lord Dunsany.

Bernice, Susan Glaspell, with *'Ilda's Honourable*, Gertrude Robins.

Pygmalion, Bernard Shaw.

Beyond the Horizon, Eugene O'Neill.

Summer Series

Fanny's First Play, Bernard Shaw.

The Importance of Being Earnest, Oscar Wilde.

Pygmalion, Bernard Shaw.

Beyond the Horizon, Eugene O'Neill.

Belinda, A. A. Milne, with *O'Flaherty, V.C.*, Bernard Shaw.

Following is a summary of the financial statement of the Greek Theatre for the three years ending June 30, 1921.

	Deficit	Income	Expenditure	Deficit
1918-19	\$ 302.28	\$24,388.04	\$24,559.24	\$ 473.48
1919-20	473.48	35,059.80	38,269.65	3683.33
1920-21	3683.33	53,409.34	53,954.21	4228.20

The expansion of the Greek Theatre activities is to be seen from comparison of the gross business for 1918-19, \$24,338.04, with the gross business for 1920-21, \$53,409.34. It will be seen that the gross business has increased materially over 200 per cent. If we look upon this department as performing a cultural service for the University and for the State at large, this means that the Greek Theatre has increased the cultural service by a similar amount.

It is apparent from the foregoing that the activities of this department are not confined to the plays, concerts and lectures given in the Greek Theatre itself. The Symphony Concerts are held in Harmon Gymnasium; Wheeler Hall has been used for plays, lectures and concerts given under the management of the Greek Theatre; the large hall in the Architecture Building has housed the art exhibitions.

This means that every attraction for which an admission charge must be made in order that the artist or artists constituting the attraction may be remunerated, must reach the University public and the citizen of the surrounding district through the management of the Greek Theatre. It often happens that there are lecturers, musicians and artists in other fields whose appearance at the University constitutes an opportunity of very real value to the students, faculty, and townspeople—an opportunity depending altogether upon the action of the Greek Theatre. It is also true that in many cases the Greek Theatre has faced a loss in presenting these attractions. I cannot help feeling, however, that this work which is so clearly a function of this department must be carried on even in the face of occasional losses. I cannot look upon the Greek Theatre as a purely business enterprise. I feel very strongly that the Greek Theatre not only should aim to present plays, lectures, concerts, exhibitions and entertainments by artists of established reputation, but in addition should strive to foster the arts both within the University and throughout the State, and above all should stimulate and encourage *creative* work in the arts whenever and wherever such inspiration and encouragement can be given. Acting upon such a policy and engaged in such activities which have no purely material end in view and consequently are unremunerative, it is hardly to be expected that the Greek Theatre will show a balance in dollars and cents. There are some values, however, that are not based upon the gold dollar and so cannot be estimated by the gold standard. If the University is to fulfill its higher function it is these very values that must be emphasized.

Respectfully submitted,

SAMUEL J. HUME,
Director.

HASTINGS COLLEGE OF THE LAW

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of Hastings College of the Law for the academic year 1920-1921:

The attendance of students has increased from sixty-two during the previous year to ninety. One-third of the students in the second and third year classes have come to the college with bachelor's degrees. The year's work has been done enthusiastically and well. The regular course of study has been supplemented by a prescribed course of reading in legal history and theoretical jurisprudence. Several new courses have been prepared for the coming year, during which we hope to occupy our permanent quarters in the new State building.

The most serious problem of our legal education is that of the educational equipment which should be required of students before beginning their law school work. We are convinced that the greatest weakness of our present system of preparation for practice is not to be found in the professional curriculum, but rather in the insufficiently directed pre-legal study. The student entering the law school should have the mental discipline which will enable him to think precisely and to express himself precisely. Perhaps this can best be attained by a thorough training in mathematics, philosophy and generally in the classics and humanities. In any case, we await with interest the report of the committee of the Association of American Law Schools appointed to investigate this subject.

Respectfully submitted,

MAURICE E. HARRISON,

Dean.

HOOPER FOUNDATION

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: I have the honor to present the following report of the George Williams Hooper Foundation for Medical Research for the year 1920-1921:

The Foundation is fortunate in being able to report uniformly favorable development of its plans and investigative problems during the past year. The Foundation has received important gifts of money which has enabled it to expand the scope of its investigations and to add valuable equipment to its plant resources. The work of the media and photographic departments has proved to be of great value to the medical school, hospital and research departments. There results also a real economy as well as expert service through a combination in these two departments of all the activities which previously were scattered among a number of divisions in the Medical School and Hospitals.

LEPROSY AND TUBERCULOSIS.

At the beginning of 1921, the National, State and San Francisco Tuberculosis Associations and certain public spirited individuals contributed a total sum of eight thousand, two hundred dollars (\$8,200.00) to assist the investigation of the therapeutics of chaulmoogra oil derivatives in tuberculosis. This financial aid enables the Foundation to undertake this investigation on an adequate scale.

A new animal house has been constructed and equipped to accommodate a large number of experimental animals. A biochemist, C. G. MacArthur, has been added to the laboratory staff to investigate the biochemistry and pharmacology of chaulmoogra derivatives. A large series of animal experiments is being conducted to test the therapeutic action of the various derivatives of chaulmoogra oil that are being prepared, to compare the relative efficacy of administration by mouth, by intramuscular and by intravenous injections, and to determine dosage, toxicity and prophylactic action of these derivatives. Lepers at the San Francisco Isolation Hospital are under treatment with chaulmoogra

derivatives with encouraging results. Selected cases of tuberculosis are being treated, but it is too early to draw any conclusions concerning the therapeutic effect of the treatment.

The investigation of the bacteriology and endemiology of leprosy is being continued. It is believed that substantial progress has been made in the solution of these problems. The work is hampered, however, by the lack of material, and it will be necessary ultimately to transfer the investigation to a region where leprosy is endemic.

PHYSIOLOGY OF INTESTINAL TRACT.

Dr. W. C. Alvarez, Assistant Professor of Research Medicine, has continued his studies on the mechanics of digestion. After several months spent in devising the necessary apparatus, he is now able to record and analyze the minute electric action currents of the stomach and bowel. This method of studying the vital processes of tissues has worked wonders in the field of heart physiology and pathology, and it is hoped that it will be equally fruitful now that it is applicable to the problems of the intestine. Work is being done also on the respiration of the intestinal muscle and on its reactions to electric currents. Dr. Alvarez is assisted by Miss Mahoney in his research problem. During the year Dr. Alvarez has brought together the results of his last eight years' work in the form of a monograph on *Peristalsis in Health and Disease*, which will soon be published by Paul Hoeber of New York.

RENAL PHYSIOLOGY AND PATHOLOGY.

Drs. Hinman, Belt and Morrison have continued their investigations in the field of hydronephrosis and kidney function. The vascular arrangement in normal and abnormal kidneys has been studied by means of injections, stereoscopic X-ray plates and corrosion preparations. The capacity of the diseased kidney to repair and regenerate and improve functionally is being studied in a considerable series of the larger experimental animals, including pigs, goats, dogs and monkeys.

BOTULISM INVESTIGATION,

As stated in the report for the year 1919-20, the National Cannermen's Association, the California Packing Corporation, and the various Canning Industries of California, invited the Hooper Foundation to make an investigation of botulism. The Associations have to date provided a total grant of eighteen thousand, three hundred dollars (\$18,300.00). It is understood that an additional sum of approximately seventeen thousand, five hundred dollars (\$17,500.00) will be given to continue the work during the coming academic year. The complexity of the problem

necessitated the organization of four divisions: field work, and bacteriological, chemical and technical sections.

Field Work.—Dr. J. C. Geiger, who has been assigned to the work on botulism by the Surgeon General of the United States Public Health Service, conducted extensive epidemiological investigations throughout the states of California, Oregon, Washington and Colorado. He analyzed all the outbreaks of botulism in man and animals which occurred in the past year in these states. At the same time he collected about 200 samples of soil, vegetables and fruits in the regions in which botulism is particularly frequent. With the assistance of the officers of inspection of the National Canners' Association, the Agricultural Experiment Stations, Research Institutes in Denmark, Belgium and Switzerland and various other agencies, samples of soil, roots, etc., were also obtained from at least fifteen to twenty other states in the Union, the Hawaiian Islands and several European countries. In order to handle the executive part of the field investigations a special office with a secretary has been provided. The data collected are being analyzed at the present time and will be published in the near future in an extensive report.

Miss Dubovsky, assisted by volunteer workers, cultured and tested the field samples mentioned above. Through her investigation it is conclusively proven that *B. botulinus* is a common inhabitant of the soil. It has also been shown that the soil of certain localities is heavily polluted with the spores of this organism and that consequently any product of the soil in this region quite frequently carries botulinus spores. The distribution of these spores is so extensive that even vegetables or fruits bought in the open market are often heavily contaminated.

Extensive studies have definitely proven that *B. botulinus* occurs in other states of the Union and that California is by no means more seriously infected than, for example, the states of New Jersey and Maryland. These observations naturally suggested some investigations dealing with the question: Can *B. botulinus* grow in the soil, or is this organism an intestinal saprophyte, and as such disseminated in the feces of domesticated or wild animals? Miss Field is studying this particular problem and she has already shown that certain soil specimens favor the development of *B. botulinus*; while on the other hand the spores of this anaerobe apparently can not germinate in the manure of various animals.

Bacteriological Section. The specimens which contain botulism toxin are referred to the bacteriological section. Dr. K. F. Meyer, Associate Professor of Tropical Medicine, has attempted to isolate in a pure form the *B. botulinus* present in the enrichment cultures. He has also interested himself in the physiology of sporulation.

Miss Oman has studied the cultural reactions of approximately sixty pure strains of *B. botulinus* from various sources. She found that the

organisms irrespective of their origin are remarkably uniform in their reactions. Some of her observations suggest that *B. botulinus* is a soil anaerobe which in all probability assists in de-nitrification processes.

Mrs. Castle Dozier has made a detailed study of the growth requirements of numerous strains of *B. botulinus*. The influence of salts and carbohydrates on the development of the vegetative and the spore stage has been analyzed. Her studies also indicate that the organism is not a strict anaerobe and may grow in the presence of a small amount of oxygen.

Miss Brink has installed a complete hydrogen-electrode equipment and is studying on a broad basis the influence of various organic acids on the growth of *B. botulinus*. She is particularly interested in the determination of the critical P_H and in the effect of certain organic acids which might possibly be used in increasing the H-ion concentration of vegetables and fruits in order to prevent the germination of the spores in the canned products. Miss Brink is also responsible for all the electro-metric H-ion determinations which may be needed by the members of the various sections.

Miss Schoenholz has attempted to classify by serologic methods, particularly by agglutination tests, the various strains of *B. botulinus* isolated in pure culture. She has been able to show that the two main groups, namely—Type A. and Type B., can again be sub-divided into two to three sub-groups. The same worker is also studying the optimum requirements for the production of a potent toxin and hemotoxin.

Chemical Section. Miss Wagner has investigated the basic nitrogen and carbohydrate metabolism of *B. botulinus* in various culture mediums. These observations have been compared with those of other putrefactive anaerobes, for example *B. tetani*. In connection with these studies, attention was paid to the gas production and the accumulation of volatile acids. Preparations are being made to identify the various acids and gases produced. It is expected that the investigation will be extended to the study of the various enzymes responsible for the metabolism. Miss Cochrane investigated the growth of *B. botulinus* in inorganic mediums, the de-nitrification of the substratums being primarily studied.

Technical Section. Dr. W. D. Bigelow, Chief Chemist of the Research Laboratories of the National Canners' Association, Washington, D. C., detailed Dr. J. Russell Esty during the months of November and December to this laboratory, that he might become acquainted with the methods employed in the study of anaerobic organisms. Later, the National Canners' Association agreed to send Dr. Esty again to this laboratory for an additional period of six to eight months. Dr. Esty arrived on March 1, 1921, and began the necessary preparations to test the thermal death time of *B. botulinus* spores in experimental packs. A

small cannery is being installed and highly resistant spores will be tested in experimental cans of fruits and vegetables. Some investigations on the heat penetration of food products will be made simultaneously.

Mr. A. C. Richardson, who received his training in the laboratory of the National Cannery Association and who is particularly qualified to do heat penetration work, has been appointed on the staff of the Botulism Investigation group. It is intended to develop standard processes for the various food products which might be endangered by the development of anaerobic organisms. The workers of this group have already determined that commercially canned fruits artificially infected with the spores of *B. botulinus* are not undergoing spoilage. It has also been demonstrated that corn, peas and salmon rapidly deteriorate when inoculated with the spores of *B. botulinus*. In connection with these studies, it was noted that not infrequently cans of vegetables which contain a potent toxin on the tenth day after incubation at body temperature would be non-toxic when the product was kept at this temperature for one to two months. This apparent "self-detoxification" is being studied more in detail.

THE PATHOGENICITY OF *B. ABORTUS* AND *B. MELITENSIS* FOR MONKEYS.

Dr. Fleischner and Mr. Vecki have completed their study on the pathogenicity of *B. abortus* for monkeys. It has been definitely demonstrated that this organism can invade the tissues of these animals only when repeatedly administered in enormous doses. It therefore must be concluded that *B. abortus* is fundamentally different in its pathogenic properties from *B. melitensis*. The results of this extensive and time consuming investigation are being prepared for publication.

CLASSIFICATION OF ANAEROBIC BACTERIA.

Mrs. Hilda H. Heller, Fellow in Research Medicine, has completed for publication several papers on the classification of anaerobes. This work must be considered fundamental and should be of much value to other workers in this difficult field. She has also completed an interesting and careful study dealing with the mutations of *B. tetani*.

Miss McRoberts has classified a large series of pure cultures of *B. tetani* by means of agglutination tests. She was able to confirm the findings of Tulloch and has extended her work to the vibrio-septique group.

EXPERIMENTAL TYPHOID CARRIERS.

Miss Thompson made an interesting study of the persistence, the lesions, etc., produced in guinea pigs by the direct inoculation of typhoid bacteria into the gall bladder. Her studies are being prepared for publication.

ANAEROBIC FECAL FLORA.

Miss Easton and Dr. Langley Porter are investigating the various types of anaerobes which may be found in the feces of children. This investigation is a continuation of the work started a few years ago. Its aim is to determine whether proteolytic anaerobes may be responsible for certain forms of intestinal intoxication. From the results thus far available, it is anticipated that the anaerobes play a subordinate role.

STERILIZATION OF ROOT CANALS.

Dr. J. A. Marshall, Associate Professor of Biochemistry and Dental Pathology in the College of Dentistry, with Dr. Berwick, is conducting some interesting investigations on certain dyes which can be used in the sterilization of root canals. Dr. Berwick has completed some work on the bacteriology of apical abscesses. He found that at least ten per cent of these lesions are sterile and that it is impossible to correlate the radiographic findings with the bacteriologic observations.

BILE ACID AND PIGMENT CHANGES.

This investigation has been continued by Mr. Wisner, Mr. Francis Smyth and Dr. Whipple, Director and Professor of Research Medicine. A great number of abnormal factors may modify the bile acids or the bile pigments quite independently of each other. A study of diet and toxic factors as influencing these bile constituents has been extended. Abnormalities in the mineral metabolism of bile fistula dogs has been suspected from the abnormalities found in the bones at autopsy and this question will be fully investigated.

STUDIES OF LIVER FUNCTION.

G. D. Delprat, Student Fellow, and Dr. Whipple completed a study of the synthesis of hippuric acid following the administration of benzoates. This reaction was shown to be dependent in part upon normal liver activity. K. F. Pelkan, Student Fellow, and Dr. Whipple took up a study of liver function as concerned with *phenolic substances*. They have shown that this conjugation and de-toxification of phenolic substances is an essential function of the liver and a measure of this reaction gives information as to the functional activity or capacity of the liver. This observation will be of value in physiological investigation and should lead to a study of less toxic substances which would be useful for studies of liver function in human beings.

ANEMIA AND BLOOD VOLUME STUDIES.

The influence of many diet factors upon the production of hemoglobin after experimental anemia has been studied further by Mrs. Robbins and Dr. Whipple. It is now certain that some food substances are more potent in conditions of simple anemia than are the familiar drugs, iron and arsenic. It is also probable that a given food element may act favorably in a given food combination but again may be inert in a different combination. Data on certain dietary deficiency diseases are being collected and studied in these same series of experiments.

Blood volume studies are of necessity a part of any investigation of anemia, as it is not easy to measure accurately the circulating volume of blood plasma and red cells or hemoglobin. An investigation of the changes in blood volume which may occur in various physiological conditions has been made by Miss Carrier, Student Fellow, F. W. Lee, Student Assistant, and Dr. Whipple. A study of the variable factors in blood volume measurement has been completed by Dr. Harry Smith, Dr. Belt, Mr. Arnold and Dr. Whipple.

ALTITUDE STUDIES.

Through the generosity of the Trustees of Rochester University, a fund of two thousand, five hundred dollars (\$2,500.00) was made available to finance an expedition into the high Sierras to study changes in blood volume and red cell or hemoglobin volume which follow residence at high altitudes. Both dogs and human beings are being used in this study which will be completed after return to sea level at San Francisco. This expedition includes the following individuals who are concerned in the experimental work: Dr. H. P. Smith, Dr. A. E. Belt, Miss E. B. Carrier and Mr. H. R. Arnold.

PERSONNEL.

During the past year the Foundation has lost the valuable services of Miss Neilson, who resigned because of ill health. Her place has been taken by Miss Schoenholz.

Mr. C. G. MacArthur, a biochemist of broad training and experience, has been added to the staff and at present is concerned with problems relating to the absorption and utilization in the body of chaulmoogric acid derivatives.

Dr. Whipple placed his resignation in the hands of the President effective July 1, 1921. This decision was made with real regret, only after consideration of the great opportunities offered by the Medical School to be developed at the University of Rochester, Rochester, New York. The Trustees of the Hooper Foundation then recommended as Acting Director for the year 1921-1922, Dr. Karl F. Meyer, who has been associated with the Foundation since the first year of its existence.

GRADUATE STUDENTS, VOLUNTEER AND SPECIAL WORKERS.

Dr. A. E. Belt, Dr. C. C. Berwick, Dr. E. C. Fleischner, Dr. J. C. Geiger, Dr. Frank Hinman, Dr. J. A. Marshall, Dr. D. M. Morrison, Dr. P. J. Pierson, Elsie Brink, C. C. Dozier, Bertha Dubovsky, Dr. J. R. Esty, Florence Field, C. G. Jespersen, Louise McRoberts, Katherine Oman, A. C. Richardson, Elizabeth Wagner, H. R. Arnold, E. B. Carrier, G. D. Delprat, E. J. Easton, F. W. Lee, K. F. Pelkan, H. P. Smith, F. S. Smyth, M. B. Thompson, M. E. Vecki, S. L. Warren, F. P. Wisner.

Volume V of the Collected Reprints of the Hooper Foundation appeared during the year. This volume contains twenty-eight papers. This list of papers illustrates the scope of work carried on in the laboratory during the current year.

In conclusion, I wish to express my sincere regret at severing my connection with the Hooper Foundation and its staff of able and loyal workers, who alone are responsible for anything of value which may have been accomplished during its seven years of growth and development.

Respectfully submitted,

GEORGE H. WHIPPLE,

Director.

UNIVERSITY INFIRMARY

BERKELEY, CALIF., July 1, 1921.

To the President of the University of California.

SIR: I have the honor to submit the following report of the Infirmary for the year 1920-21:

In the past five years our University has doubled in number of intramural students and as a consequence the Infirmary has completely outgrown its present quarters. The congestion resulting cannot but have an influence on the high type of service for which the Infirmary staff stands.

Again the University Physician makes an appeal for a new Infirmary with an adequate and spacious dispensary where clinics can be properly conducted, service extended, and scientific treatment rendered in a democratic manner along the principles which have given our institution international preëminence.

During the year 1919-20, the number of dispensary treatments was the largest recorded in our history, numbering 41,113, or 150 treatments each infirmary day. Our statistics show that the students who avail themselves of the dispensary averaged eight visits per annum, a striking economic illustration of service that is not paralleled for the fee collected.

It is the aim of the University Physician and the members of the staff to render the best of service. In these days of specialization, it is of course impossible for us to render every form of specialist's care to our student body and we must, therefore, limit ourselves to the service best adapted to our group.

During the first five months of 1920, the Bureau of Communicable Diseases of the State Board of Health chronicled 3445 cases of smallpox, of which 1075 cases came from Alameda County. A neighboring college had eight cases, and while two of our employees on our campus were afflicted with this disease, not one of the 10,887 registered regular students were infected; a splendid argument for compulsory vaccination which our Regents so wisely enacted as an entrance requirement.

The Infirmary, with its complete records and mass of available material, hopes, from a research standpoint, to enrich scientific literature by solving certain problems which will add to the fund of medical know-

edge. Dr. C. L. McVey, Senior Physician for Men, is investigating a method of therapy for intestinal flagellates. Dr. L. M. Boyers, Assistant Physician for Men, is studying a problem associated with parotitis. A close coöperation with other departments of the University in fields of special research, is now being conducted.

Dr. R. O. Moody, Associate Professor of Anatomy, is determining by the X-ray a comparison of the gastro intestinal tract in its relation to body surface measurements. Dr. H. M. Evans, Professor of Anatomy, in collaboration with Dr. R. L. Cunningham, Physician for Women, is studying problems of the mammary gland measurements, particularly during the menstrual epoch. Dr. W. C. Alvarez, Assistant Professor of Research Medicine, is also continuing his blood pressure observations among college students.

The monthly staff meetings instituted last year, not only have added interest in the work, by means of discussion and suggestions, but also have created a closer coöperation for service and have been of scientific and social value as well.

The new international nomenclature for the classification of diseases has been adopted and will be instituted at the beginning of the new fiscal year.

The Infirmary library has been augmented by a number of late publications on modern medicine and monographs on subjects of interest to the specialist. These books were purchased from special funds donated by grateful and appreciative parents for services rendered their children while confined in the Infirmary.

During the past year the Regents have had constructed on our building two fire escapes, and have added several chemical fire extinguishers and hose reels. A survey was made of the premises by the Berkeley Fire Department as to methods of fire prevention, control and rescue. All these measures have materially relieved the suspense which is always experienced when operating in wooden structures.

The University of California Infirmary has become a member of the new national American Students' Health Association, an organization instituted this past year for the specific purpose of studying and standardizing problems of students' health.

A committee for the standardization of hospitals, appointed by the League for the Conservation of Public Health, of the California State Medical Society, inspected the premises and after receiving the properly filled in questionnaire, officially indorsed the Infirmary as complying with all the requirements of a Class "A" institution as to staff, records and equipment.

A students' women society which desires its name withheld, has for the past five years been working arduously in securing funds to purchase an ambulance for the Infirmary. The amount collected is now sufficient

to secure the ambulance and an order has been placed for the same. The housing and upkeep will be maintained from the regular infirmary budget.

With its usual generosity, the Prytanean Society has offered funds sufficient to purchase special equipment much needed for the operating room. The California Optical Company of Berkeley has presented the Infirmary with an electric lighted Greens Testing Cabinet for refracting eyes, an addition to the ophthalmological department, which makes possible greater service and efficiency.

Respectfully submitted,

ROBERT T. LEGGE,
University Physician.

UNIVERSITY LIBRARY

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report on the progress of the University Library for the twelve months ending June 30, 1921.

Approximately 26,000 volumes were added to the library during the year, or about 5000 more than last year. The increase is due largely to heavy purchasing from the income of the Carpentier fund, and to the use of student book fees. Some of the more important accessions of the year are listed in the Appendix.

In September the Regents' Committee on Library, Research and Publications began to hold monthly meetings in Berkeley, with representatives of the three interests in attendance. The Chairman of the Library Committee of the Academic Senate and the Librarian represented the library. Various problems of the library have been presented and discussed at length in these meetings, and the members of the Committee have evinced keen interest and a disposition to be of practical assistance in solving them.

At various times the Librarian has expressed his belief that all students, if possible upon entering the University and in any case not later than the beginning of the junior year, should have some practical instruction in the use of the library. The problems to be solved in organizing an effective course of this kind are many and various, but a beginning might well be made in the direction pointed by the Department of English. Members of the library staff thrown constantly into contact with undergraduate students feel that the talks given last April to the various sections in English I by speakers from the library were productive of recognizable results, which might have been carried considerably further had it been possible to follow them up. When, or if, the courses in Library Science are reorganized as a school it should be possible to offer advanced bibliographical instruction to students intending to enter some field of research; but the dissemination of first principles on a large scale must remain the problem of the library.

The Library Committee has approved a plan fathered by Professors S. J. Holmes and C. W. Wells, for building up in the main reading room a collection of books of both interest and value in fields in which work

is being done in the University, with a view to encouraging students to read what is really worth while; not wholly for amusement, but quite apart from anything they are required to do in connection with their studies. The authors of this plan believe that to make such books readily available without the intervention of catalogue and loan desk, will bring a quick response from the students. It is proposed that each department be asked to suggest titles within its field of activity, that additional copies be secured if needed for circulation, and that the collection replace in the reading room that part of the present contents which is neither essential for reference work nor particularly attractive to readers. In the fall steps will probably be taken to put the plan into operation.

At the present time it is very difficult to secure trained and experienced cataloguers capable of doing work of the kind required in a university library. Our force is so seriously depleted that it can do little more than keep up with current work; large accessions cannot be handled at all, and recataloguing at the present rate of progress bids fair to drag on for twenty years. Augmentation of the cataloguing force is little less than imperative.

The next budget of the University should make provision for the erection in the library of at least five tiers of new stack, and preferably for the entire stack. The present stack is crowded, and a crowded stack under our conditions means a rapidly mounting addition to administrative expense. New construction should provide not only for the expansion of the present collection but for the anticipated growth of from five to ten years. Two tiers will be needed for the Bancroft Library when that library is moved to the fourth floor in accordance with the plan outlined in the preceding report, making five tiers a minimum requirement.

During the year students enrolled in various courses in anthropology, economics, education, English, geography, history and political science paid in about \$13,700 in book fees. These fees were assessed upon all students in the courses concerned in order to provide an adequate number of books for required reading. The complications involved in the administration of these funds imposed a severe tax upon the library and upon the accounting department. The Library Committee felt that the plan worked some injustice upon the students affected by it, and proposed the substitution of a uniform fee to be levied upon all students.

Whatever provision may be made to replace or to supplement student book fees, it should be extended to cover the entire field of book reserved for class use. At the present time thousands of books from the stack are segregated in the reserved book room for class use and thus removed from general circulation, a large proportion of them being books of general appeal and in active demand by readers not enrolled in the courses for which they are reserved. The Library Committee has hel

that duplicate copies of books for class use must be provided from other than General Library funds, and it is a fair question whether this ruling should not apply to any book required for intensive class use. In the opinion of the Librarian it should; the general collection should be freed from the demands of the reserved book room, and the entire reserved collection built up and maintained from funds supplied for that purpose. If funds are not available to do this all at once the principle should be accepted, and practice made to conform to it as rapidly as possible. Thirteen thousand dollars a year would free the general collection in a very short time.

Through the system of inter-library loans requests from other institutions, including departments of the University outside of Berkeley, were honored to the number of 243 (479 volumes). In general the borrowers were the same as in past years, the only notable newcomer being the Southern Branch. Books sent to the Southern Branch for the use of Summer Session classes are not included in this enumeration, but the Branch has been a heavy borrower throughout the year. It is becoming evident that with the growth of departments outside of Berkeley the General Library must be prepared to meet such calls in rapidly increasing numbers, and that this will necessitate some enlargement of the present mechanism. Borrowings from other libraries numbered 89 (158 volumes).

Accessions Department.—The increase of 4585 volumes over the accessions of the preceding year indicates a growth of about 5500 in the number purchased, as gifts were approximately 1000 volumes less than last year and receipts from other sources about stationary. More than half the increase, over 3000 volumes, was in books purchased from student book fees.

Despite stationary costs and a larger appropriation for binding, little headway was made in bringing up arrears. In addition to normal requirements, it was necessary to bind many files of German periodicals for the entire war period, these files having reached completion by slow stages through the year. There is still a great mass of material, for the most part gifts or exchanges, awaiting binding. The number of volumes requiring rebinding this year was considerably above normal, owing partly to increased registration in the University involving harder usage of the books, and partly to the larger number of books shelved in the reserved book room and subject to especial wear and tear.

Resumption of exchange relations disorganized by the war is proceeding but slowly. The high cost of printing and the depressed state of the finances of learned societies, particularly in Europe, tends to discourage publication which is not commercially profitable. Large shipments of German university theses were received during the year, bringing our files up to date.

The files of German periodicals for the period of the war are now fairly complete, and negotiations are in progress with regard to those which are not. The situation is steadily improving in respect to timely delivery of current issues, but the service is still inferior to that of pre-war days. The most annoying feature of the situation in the German trade at present is the uncertainty regarding costs. Service to the library has been improved by the transference of our German business from our former agents, who proved unsatisfactory during and since the war, to a Leipzig firm with extensive connections and an excellent reputation in this country.

Reclassification and Recataloguing.—The new subject undertaken this year by the recataloguing division was S (Agriculture). Groups T (Technology), U (Military Science) and V (Naval Science) started last year, were completed, and S is about half done. The subjects still to be undertaken are B (Philosophy and Religion), K (Law), M (Music), N (Fine Arts), P (Language and Literature), Q (Science), and R (Medicine). 168,519 volumes (79,852 titles) are now classified and catalogued under the new system. Of these 22,495 volumes (10,483 titles) represent the output of this division for the year. This division was obliged to operate with a skeleton force during the last quarter, so that the record is not discreditable; but satisfactory progress cannot be expected until a cataloguing force is materially augmented.

It has been decided that the accumulated author cards for books in the Bancroft Library shall be filed in the public catalogue, and that this practice shall be continued as the cataloguing of that library progresses.

Old Catalogue and Depository Catalogue.—The work of this department has proceeded with gratifying regularity. Heavy accessions in reclassified subjects have proved too much for one cataloguer to handle, and additional assistance is needed to reduce arrears.

The growing strength of the library in Orientalia, resulting largely from the use of the income from the Carpentier fund, raised the question whether such books should be scattered through the library under subjects, as are books in the languages of Europe and America, or whether scholarly needs would be better served by the adoption of a different method of treatment. After investigation of the practice of libraries having large collections of Orientalia and consultation with interested members of our own faculty, the decision was reached to segregate such material and to classify it under language. The classification adopted for the Kiang collection, which follows that of the library of the University of Peking, will be used for all books in Chinese characters, and they will be designated in the public catalogue and elsewhere by the figure prefixed to call numbers. The Library of Congress classification will be followed for books in Japanese characters, and the call numbers of such books will bear a prefixed 7. For Hebrew books and those in other Oriental languages, the Rowell classification will be continued.

More than 52,000 cards were filed during the year in the depository catalogue, which has attained a size of approximately 1,107,400 cards. The cabinets which house it are filled to capacity and additional accommodations must be provided; probably in the form of single-faced cabinets against the walls of the west corridor, where they will be readily accessible to public and cataloguers alike. This need is pressing, as in addition to normal accessions more than 50,000 cards for German theses, representing the war years, still await attention. It is hoped also that the clipping and mounting on cards of entries from the British Museum accessions lists, suspended last year by reason of insufficient funds, may be resumed shortly, and the scope of the depository catalogue increased by the inclusion in it of this valuable material, which is practically useless in its present form.

Loan and Shelf Department.—The number of books charged to readers at the loan desk and in the reserved book room reached a total of approximately 710,600, an increase of more than 91,000 over last year. The decrease of about 8000 in the number issued from the loan desk is offset by an increase of nearly 100,000 in the reserved book room, a gain due partly to the opening of this room during the Intersession, but more particularly to the considerable increase in the number of copies of reserved books made available through the operation of the system of student book fees. With reference to the loan desk demand, the superintendent of circulation points out that the smaller figures indicate no considerable easing of pressure, as call slips are presented to at least twice the number of books issued. In other words, while the duties of the attendants are not lessened materially, about 50 per cent of the demand is unsatisfied at the loan desk. This is due in part to the number of books already charged out to other readers or at the bindery, and in part to the requisition of books for class reserve, which drafts off from the stack to the reserved book room an ever-increasing number of titles of general interest. The adoption of some plan to relieve the general collection from class demand would meet this situation, and there are other considerations rendering such a policy highly desirable.

There has been complaint of slow service at the loan desk, and unquestionably readers have often to wait an appreciable time to secure a book which is in or to learn that it is not available. The installation of a mechanical carrier and a pneumatic tube system connecting the loan desk with all floors of the stack should reduce delay in the handling of ordinary calls, but there seems to be no other way in which service can be quickened materially under present conditions, with a nine-tier stack, service elevators of exasperating deliberation, and congestion at the loan desk which prevents effective use of a larger force but for which no relief seems possible before the new stack is erected. The shutting up of some thirty seminar rooms of several thousand volumes, and the necessity for detaching an attendant from his regular work when one of these

books is called for at the loan desk, is a source of delay not only to the reader asking for the book but to all who are awaiting service at the time. This delay can be obviated only by a change of policy with respect to seminar room deposits.

As usual, losses are heavy. Of a total of 676 volumes missing from the General Library building, 472 are from the reserved book room and 133 from the main reading room, which is not under supervision; 56 are missing from seminar rooms, and 15 from the stack. In addition, there have been lost from departmental libraries 97 deposited General Library books and 620 volumes belonging to the departments. These are corrected figures allowing for deduction of items reported lost at some time during the year and later found. Of the books lost from the reserved book room, 82 volumes were drawn on forged or fictitious signatures. This practice, which is not confined to the reserved book room, has reached proportions which probably will necessitate identification of persons presenting call slips in future. This procedure will be a nuisance to all concerned, must retard service, and will be adopted with regret and only under pressure of necessity.

Congestion in the stack has reached a point which greatly increases the amount of shifting necessitated by the progress of reclassification and the housing of new material; something over 204,000 volumes were shifted during the year in stack and reading room. This item of expense will increase rapidly as the stack becomes more crowded.

During the Intersession the library was open on regular schedule and the reserved book room was in operation. The record of attendance shows little use of the building on Sunday or on Friday or Saturday nights, but fairly constant use on other nights. The cost of keeping the library open on full schedule during the six weeks rather than on the customary vacation schedule with reserved book room closed, amounts to approximately \$884. The number of volumes circulated was about 23,000, of which more than half were drawn from the reserved collection for use in the building, calls on the reserved collection for overnight use being insignificant. About 9500 volumes were issued over the loan desk.

It is recommended that for the Intersession of 1922 the library be closed Friday and Saturday evenings and on Sunday, but that with the exception of the special reading rooms, it remain open on full schedule for the rest of the week.

Reference Department.—The Department of Agriculture having provided the means, in March a room was opened as a reference room for agriculture, with an assistant in charge responsible to the reference librarian in dealings with readers and to the head of the accession department in matters of acquisition, record or binding. This arrangement promises to terminate the unsatisfactory conditions and the confusion which has existed since the taking over of the departmental collection by the library in the summer of 1919.

Records of attendance kept for three months in order to test the use of the room show that in February the number of readers was 315, in March 648, and in April 1059. It has grown steadily since, and reference work has increased in proportion. It is gratifying to be able to state that the service which the Department of Agriculture expected to receive when its departmental collection was turned over to the General Library, and which for reasons set forth in the preceding report it has not received hitherto, is now fairly in sight. The completion and binding of the periodical files to date and the recording and arranging of the miscellaneous unbound material should be finished during the next few months, and the reclassification and recataloguing of Agriculture should be completed in the course of the year. Provision should be made for keeping this room open on full schedule of 92 hours per week instead of on the present reduced schedule of 66 hours. The demand fully warrants the small additional expense.

From the standpoint of efficient service to readers generally, it is desirable that a somewhat similar arrangement should be made with Education and with Economics. Both departments make much use of specialized material, largely in pamphlet form and neither listed in the book trade bibliographies nor obtainable through ordinary trade channels. Both in procuring, and in assisting readers to use, this material special knowledge or experience is essential, as well as more time than can be devoted to the needs of two departments by assistants charged with duties toward all. The present situation, especially in the case of Economics, leads to endless confusion and consequent irritation, not only to readers but to publishing organizations approached by the General Library and the department separately, each in ignorance that the other has acted. The reference department is often unable to assist readers through lack of information as to publications which the departmental librarian has secured, but which do not appear on the General Library records. It is believed that the machinery of the General Library can be extended and adapted to serve the peculiar needs of these two departments to their satisfaction, at the same time affording better service to the general body of readers, reducing expense by eliminating duplication of effort and of records, and perhaps caring more adequately for the material acquired.

Revision of the *List of Serials* published in 1913 (Library Bulletin No. 18) and the publication of a new edition is greatly to be desired. The accessions of nine years have rendered the original list almost useless as a guide to the periodical content of the library. An attempt will be made to provide for publication in 1923. It will greatly enhance the value of the new edition if an arrangement can be made with Stanford University to coöperate in the undertaking, making it a joint record of the resources of both institutions.

There has been an increase in requests for assistance from various activities of the University, both educational and administrative. Frequent demand for material on university problems has necessitated the compilation of an index to the Proceedings of the Association of American Universities from 1900 to date, and to the Proceedings of the National Association of State Universities from 1903 to date. Reading lists and short bibliographies on a variety of subjects have been compiled as in former years; a few of the more important deal with ethics of trade examination systems, coeducation, cost of a college education, and morbidity statistics.

Library Staff.—As in the preceding year, several members of the staff conducted courses in Library Science in addition to their regular duties and without compensation other than the sense of an important service rendered. During the summer of 1920 Miss Nella J. Martin, senior assistant, was lent to the Southern Branch in Los Angeles as Summer Session Librarian. The situation was not devoid of difficulty, but Miss Martin's success in handling it is attested by most gratifying reports from the Dean. In response to a request from the Department of English, during the first week in April members of the library staff addressed the twenty sections in English 1 on the use of the library, the speakers being Miss Coulter, Miss Martin, Miss MacIver, and the Librarian. In June Miss Coulter, Miss Hedrick, Miss Camper and the Librarian attended the annual meeting of the California Library Association at Lake Tahoe, each having a place on the programme, which also included a paper by Miss MacIver read by Miss Keating of the Berkeley Public Library. At this meeting Mr. Sydney B. Mitchell, Associate Librarian, was elected vice-president of the Association for the ensuing year. Later in June Miss Hedrick, Miss Phipps and the Librarian attended the meeting of the American Library Association at Swampscott, Mass.

Library Training.—Twenty students completed the work in Library Science in May, leaving ten to continue next year. Enough applications are in hand from graduates and seniors intending to take all four courses in one year to insure the filling of the twenty vacant places in August, and it seems probable that for the future senior or graduate status will be required for admission; a change much to be desired. Nearly all of this year's graduates are now either under appointment to library positions or in correspondence relative to appointments offered, the demand for trained library assistants and even for chief librarians being greatly in excess of the supply. Librarians with whom last year's graduates held positions were asked for reports upon their work, with a view to testing the curriculum. While the replies were uniformly favorable, suggestions were made indicating the desirability of more thorough instruction in certain subjects; and where possible the curriculum will be strengthened accordingly.

Courses were conducted by Miss Martin, Miss Coulter, Miss Cole, Mr. Mitchell and Mr. Bumstead of our own staff, and by Mr. Carleton B. Joeckel, Librarian of the Berkeley Public Library, Mrs. May Dexter Henshall, Library Organizer, California State Library, Miss Helen L. Price, Librarian of the University High School, Oakland, Mrs. Alice G. Whitbeck, Librarian of the Contra Costa County Free Library and Mr. Albert H. Allen, of Berkeley. In March we were so fortunate as to secure for a series of lectures on business libraries, Miss Louise B. Krause, Librarian of H. M. Byllesby and Company of Chicago, who had come to California to conduct a course at the Riverside Library Service School. Lectures were also delivered by Mr. Milton J. Ferguson, State Librarian, Miss Louise Ophüls, Librarian of the Lane Medical Library, San Francisco, and Mr. Eugene Sommer, of Berkeley; by Professors J. Grinnell, G. R. Noyes, E. I. McCormac, H. I. Priestley, J. J. Van Nostrand, and S. J. Hume of the University faculty, Mr. J. R. Waybur of the Extension Division, Miss Rosamund Parma, Librarian of the Law Library, and Miss Gerda Frederiksen of our staff. Through the coöperation of Miss Mary Barmby, Librarian of the Alameda County Free Library, Miss Price and Mr. Joeckel, the Alameda County, University High School and Berkeley Public libraries were opened to the students as laboratories where required practice work was done; in this connection especial mention should be made of assistance rendered by Miss Ione Tucker, in charge of the children's room in the Berkeley Public Library. The promised coöperation of the State Library took concrete form in the assignment of Mrs. Henshall to conduct a course on county libraries and California library law, extending through the first semester. The expense of this course, involving as it did a weekly journey from Sacramento for Mrs. Henshall, was borne by the State Library. The members of our own staff received no compensation for their work, the assistance of all lecturers connected with the University was freely rendered, and in no case was the honorarium at all commensurate with the time and effort expended. Obviously, the library cannot continue to offer instruction on this basis much longer; reorganization of the Library Science courses as a department of instruction, or preferably as a school, with its own budget and independent of the library, must come in the near future if the work is to go on.

Financial Statement.—A tentative library budget for 1920-21 was announced in July and the year's expenditures were apportioned in accordance therewith. Owing to the failure of the University to secure certain appropriations, retrenchment became necessary and in December a revised budget was announced, in which the allotment for the library was considerably reduced. As the library was committed to certain expenditures under the heads of Assistance and of Expense which could not be brought within the reduced allotment, in a series of conferences the following steps were agreed upon to meet the situation:

1. Reduction in staff to effect a saving of approximately \$1,000. This fell mainly upon the recataloguing division, where the services of a number of temporary assistants could be dispensed with without serious detriment to essential service.

2. Transfer from Intersession income to Library Expense of approximately \$1,016, being the estimated cost of full service during the Intersession over normal vacation expenditure for the period.

3. Emergency appropriation by the Regents of \$900.

The budget as finally determined in December with increases as indicated under 2 and 3, is summarized as follows:

Salaries and assistance	\$75,150.00
Expense and equipment	8,013.00
Books	29,034.00
Binding	10,500.00
	<hr/>
	\$122,697.00

The book fund is made up as follows:

*Income from gift funds restricted to specified uses	\$7,614.00
*Income from Reese fund (general)	\$2,920.00
*Income from Davis fund (general)	500.00
University appropriation	18,000.00
	<hr/>
	21,420.00
	<hr/>
	\$29,034.00

Distribution of \$21,420.00:

Periodicals and sets	\$8,000.00
Works of general interest	2,500.00
Librarian's fund	1,500.00
Special grant (History of Mathematics)	200.00
Departmental allotments on unit basis	9,220.00
	<hr/>
	\$21,420.00

Respectfully submitted,

HAROLD L. LEUPP,
Librarian.

* These estimates, which were made in September in order to permit allocation of funds, are not quite accurate; the corrected figures to the nearest dollar are \$735, \$2700, and \$540 respectively. A grant of \$1341 from income from the Searles fund and \$13,682 from student book fees should be added to make up the total sum available for the purchase of books during the year.

APPENDIX

A. ACCESSIONS OF NEW BOOKS, 1920-21

	Volumes	Volumes
By purchase	8,963	
By binding of periodicals	2,515	
By exchange	677	
By gift	4,289	
Received by department libraries (all sources)	9,540	
	<hr/>	25,984
Volumes in library June 30, 1920		413,824
		<hr/>
Volumes withdrawn or lost, 1920-21		439,808
		<hr/>
Volumes in library June 30, 1921		325
		<hr/>
		439,483

B. IMPORTANT ADDITIONS, 1920-21

- Anthropologische gesellschaft in Wien. Mitteilungen. 1871-1912. 33 vols. in 16.
 Baronio. Annales ecclesiastici. 1864-82. 37 vols.
 Berliner klinische wochenschrift. 1864-1920. 57 vols.
 Bewick. History of British birds. 1797-1804. 2 vols.
 Bougainville. Journal de la navigation autour du globe de la frégate la Thétis, etc. 1828-37. 4 vols.
 Brisson. Ornithologie; ou, Méthode contenant la division des oiseaux en ordres, sections, genres, espèces, et leurs variétés. 1760. 6 vols.
 British museum. Natural history. Dept. of zoology. Catalogue of the collection of birds' eggs in the British museum. 1901-12. 5 vols.
 Budge. Egyptian hieroglyphic dictionary. 1920. 2 vols.
 Canada. Parliament. Sessional papers. 76 vols., completing set.
 Canada. Legislative Assembly. Journals and appendices. 1841-66. 138 vols.
 Canada. Parliament. Debates in Senate and House of Commons. 1870-71, 1875-1918. 51 vols.
 Claudin. Histoire de l'imprimerie en France. 1904. 3 vols.
 Collection of reprints of some 282 Chinese works.
 Daudet. Oeuvres. 1899-1901. 18 vols.
 Deshayes. Description des animaux sans vertèbres découverts dans le bassin de Paris. 1857-66. 3 vols.
 Deutsche Orient-gesellschaft, Berlin. Wissenschaftliche veröfentlichungen. 1900-1920. 33 vols.
 Donovan. Natural history of insects in China, India and New Holland. 1799-1805. 3 vols.
 Dumont d'Urville. Voyage de la corvette l'Astrolabe. 1826-1834. 22 vols.
 Dumont d'Urville. Voyage au pôle sud et dans l'Océanie sur les courvettes l'Astrolabe et la Zélée. 1841-54. 28 vols.
 Force, Peter. Tracts and other papers. 1836-46. 4 vols.
 Frankfurter zeitschrift für pathologie. 1907-15. 18 vols.
 Galilei. Opera. 1890-1909. 20 vols.
 Gould. Birds of Asia. 1850-83. 7 vols.
 Hedin. Southern Tibet. 1917-. 4 vols.

- Hume and Marshall. Game birds of India, Burma and Ceylon. 1879-81. 3 vols.
- Harleian society. Publications. 121 volumes.
- India. Linguistic survey. Linguistic survey of India, edited by Grierson. 1904-16. 14 vols.
- Journal of natural philosophy, chemistry and the arts, edited by Nicholson. 1797-1813. 41 vols.
- Latham. General synopsis of birds. 1871-1890. 6 vols. in 9.
- Leyden. Rijks geologisch-mineralogisch museum. Sammlungen. . . . (ed. by Martin.) 1887-1917. 15 vols.
- Maseres, editor. *Scriptores logarithmici*. 1791-1807. 6 vols.
- Massachusetts historical society. Publications. 12 vols.
- Millais. Mammals of Great Britain and Ireland. 1904-06. 3 vols.
- Moor. The Hindu pantheon. 1810.
- Hamburg. Museum Godeffroy. 1873-1910. 17 vols.
- Padua. Università. Istituto geologico. *Memorie dell' Istituto geologico della R. Università di Padova*. 1912. 35 vols.
- Revue des bibliothèques, with supplement. 1891-1918. 28 vols.
- Rowley. Ornithological miscellany. 1876-78. 3 vols.
- Sacred books and early literature of the East, edited by Horne. 14 vols.
- Selys-Longchamps. Catalogue systematique et descriptif des collections zoologiques. 23 parts.
- Shakespeare. Works, edited by Furnivall. 1853-65. 16 vols.
- Sociedad española de historia natural, Madrid. *Anales*. 1872-1901. 30 vols.
- Society of automotive engineers. Transactions. 1911-1919.
- Sowerby. *Thesaurus conchyliorum*. 1847-87. 5 vols.
- Tijdschrift voor entomologie, etc. 1858-1919. 60 vols.
- Victoria history of the counties of England.
- Webster. The stage, a poem inscribed to Jos. Addison. 1713.
- Westminster review (including London review). 56 vols.
- Wied-Neuwied. Beiträge zur naturgeschichte von Brasilien. 1825-32. 4 vols. in 6.

C. SOME GIFTS AND LEGACIES OF 1920-21

Mr. J. C. Cebrian has continued to add systematically to the Spanish collection. More than a thousand volumes have been received from him and others are on the way from Spain, where Mr. Cebrian has given personal attention to their acquisition. A very valuable feature of the most recent shipment is a group of Spanish periodicals filling gaps in our sets. In connection with one of his gifts Mr. Cebrian writes: "My endeavor is to make for the University of California the largest, richest, and most valuable collection of Spanish books in America."

By the will of the late Ambrose Bierce forty-four volumes from his personal library were left to us. In addition to a beautifully bound set of his own Collected Works (No. 2 of a limited edition of 250 sets) there are thirty-two volumes presented to Bierce by their several authors, and autographed. The writers include Gertrude Atherton, James Hopper, George Horton, Elbert Hubbard, Jack London, Edwin Markham, Henry L. Mencken, Percival Pollard, Herman Scheffauer, George Sterling, and Edward Robeson Taylor. Among the inscriptions appear original unpublished poems by Flora M. Shearer and George Sterling. The collection will be retained intact as a permanent memorial to Ambrose Bierce.

Through the generosity of an alumnus who desires to remain anonymous, the Library was enabled to purchase in Paris the valuable library of the late Alexandre Bruel. The collection has not arrived, but it is known to be rich in source material, particularly for the history of the Middle Ages. It numbers approximately 5000 volumes and 600 pamphlets. Dr. W. N. C. Carlton, recently Director of the American Library in Paris and previously Librarian of the Newberry Library in Chicago, had the kindness to examine the collection at our request, and the purchase was concluded on the strength of his favorable report. This important addition to the library will be described more fully in a later report.

As a legacy from the late Mrs. Hannah L. Haviland was received her personal library, of which 147 volumes have been accessioned. Several of the books contain the signature of the late Collis P. Huntington, apparently having formed part of his library at one time.

As a memorial to the late Professor Henry Morse Stephens, for many years an active member of the Bohemian Club and author of "Saint Patrick at Tara," the Grove Play of 1909, the Club presented a set of the Grove Plays in three volumes, beautifully bound, with the following inscription: "In his absence, and in loving and respectful memory of him, these volumes intended for Henry Morse Stephens are presented to the University of California by the Bohemian Club. Haig Patigan, President. San Francisco, June 2, 1921."

Mr. William D. Sohier of Boston presented through Professor Merritt L. Fernald of the Gray Herbarium, Harvard University, the handsome and valuable work entitled *Plantae Asiaticae rariores; or, Descriptions and figures of a select number of unpublished East Indian plants*, by Nathaniel Wallich . . . 3 v. London, 1830-1832.

Mrs. James B. Smith of Burlingame, acting through Professor W. L. Jepson, gave ten rare botanical works, including the *Herball; or, General historie of plantes*. Gathered by John Gerarde of London. . . London, 1597; and the sumptuously illustrated *Eden* of John Hill, London, 1757. Mrs. Smith has made a number of gifts to the Department of Botany in past years.

A gentleman who wishes to remain anonymous presented two interesting old French books: *L'Astree de Messire Honoré Durfé, première partie* . . . Paris 1614; and *Traitté des droites de la reyne tres-chrestienne svr divers estats de la monarchie d'Espagne*. Paris, 1667; by Antoine Bilain, originally Vilain, who is said to have received 22,000 livres from Louis XIV for this vindication of Maria Theresa's right to Franche Compté and the Low Countries. This is probably a first edition.

The Erivan Club of Associated Armenian Students of the University of California donated a number of volumes in the Armenian language and is defraying the cost of certain works in European languages pertaining to the life, literature, art and history of Armenia, which the Library has ordered. The gift is intended as a nucleus for future contributions.

From Mr. James Rennie a group of reports of British agricultural societies was received, thirty-nine volumes of which were incorporated in the Library, duplicates being sent to the library of the University Farm at Davis. Mr. H. T. Cory presented a number of volumes in the field of civil engineering, including publications of engineering societies and water supply reports of California interest. From Mrs. Edward Gray seventy-five Spanish books were received, and from Mrs.

John L. Howard 130 musical items. Dr. Mary Taylor donated a collection of classical books as a memorial to Hugh W. Taylor. A set of the Catholic Encyclopedia in fifteen volumes, was presented by Archbishop Hanna through Professor Paetow. The California State Veterinary Association purchased, bound and gave to the library ninety-two items from Germany in the field of veterinary science.

A number of gifts other than books were received by the Library, as indicated in the following list:

From W. W. Ferrier, contemporary copy of the first Thanksgiving proclamation in California by Governor Riley, 1849; also original manuscript of the first Thanksgiving Day sermon delivered in California by Reverend S. H. Willey.

From an unknown donor through J. H. Gray, an autograph letter of George Washington, 1780.

From Alex. F. Morrison, '78, plaque showing the California winners of the Joffre (formerly the Carnot) medal.

From the University of California Masonic Ambulance Corps, a silk U. S. flag used in France.

Deposited by Richard A. McLaren, banner of the University of California Corps, American Field Service. (This flag and banner were placed in the Library of French Thought February 7, 1921, by direction of Professor Gayley.)

Bronze medal from the University of Virginia commemorating its one hundredth anniversary.

Bronze medal from Harvey L. Hanson given to members of S. S. U. 586, U. S. A. Ambulance Service with the French Army.

BANCROFT LIBRARY

BERKELEY, July 1, 1921.

To the President of the University.

SIR: We have the honor to submit the report of the Bancroft Library for the year ending June 30, 1921.

During the year the library has been the recipient of a number of valuable gifts which have aggregated several scores of volumes, some of them having very considerable value. These gifts have been chiefly printed documents from Hispanic American states and various international boundary commissions. The number of accessions of printed materials through purchase amounts to some 500 items, for which nearly \$1000 was expended. Approximately the same amount has been expended for transcripts of manuscripts from Spain and Mexico.

During the year the recataloguing of the old materials has gone on in connection with current cataloguing of new books. About 900 items were recatalogued, and approximately 5000 cards were added to the catalogue, which has been thoroughly revised.

Research carried on in the Bancroft Library has produced a number of interesting and valuable studies. Two publications have been issued from the University Press: *The San Francisco Vigilance Committee of 1851*, by Dr. Mary F. Williams; and *Explorations for Pacific Railroads*, by G. Leslie Albright. Other monographs by our graduate students and based on our collection are in press or awaiting publication.

The library personnel have continued research and publication. Work of this nature done in the Bancroft Library by members of the Department of History is mentioned in the report of that department. Professor Bolton in two summer trips has begun the exploration of the Anza Trail over the Sierras, in preparation for the editing of the Anza Journals, which we expect to publish soon. Professor Priestley's study of Spanish Colonial Municipalities was translated and published in Mexico City for use in the schools and colleges. An article by him on "Mexican Agrarianism" will appear soon in the *North American Review*. He is still at work on his general history of Mexico. Mr. J. J. Hill, Assistant Librarian, has prepared for publication an important study of the early American movement into California. Parts of this study will be published in the fall. Mr. Hill and Professor Bolton are compiling an extensive series of volumes on Early Western Travels, 1821-1850.

The work of the California Historical Survey Commission, carried on in connection with this library, has brought to completion the manuscript for a survey of Mission San Carlos Borromeo at Carmel, written by Frances Rand Smith and edited by Dr. Owen C. Coy, Secretary of the Commission. Materials have been collected and prepared for publication for the missions of San Diego, San Antonio, and Santa Cruz.

A marked manifestation of the period under review has been the marketing of large stocks of Western Americana. The work of keeping in touch with this increased output has been greatly enhanced, while the need for larger funds with which to keep pace with the current offerings has become urgent.

Respectfully submitted,

HERBERT E. BOLTON,

Director.

HERBERT I. PRIESTLEY,

Librarian.

LICK ASTRONOMICAL DEPARTMENT

(LICK OBSERVATORY)

MOUNT HAMILTON, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit herewith my report for the period July 1, 1920, to June 30, 1921.

My report for last year described and emphasized the pressing need for inaugurating a building programme which would replace the many cheap and small buildings which dot the mountain top by new structures inwardly comfortable and outwardly worthy of their surroundings. The Lick Observatory Committee of the Board of Regents visited Mount Hamilton on the afternoon of June 25, 1921, in order to obtain a better comprehension of the needs. Otherwise no progress has been made on this problem during the academic year.

At the time of preparing last year's report, Mr. K. H. Tucker, Astronomer, had shown that meridian transit observations of stars made at and near sunrise and similar observations made at and near sunset led to values of the clock correction which were inconsistent with the well-determined average daily rate of the clock. Meridian transits were recorded 0.06 second of time too early in the sunset period as compared with transits in the sunrise period. Further extensive study of the subject has led Mr. Tucker to conclude that the explanation lies in the interesting and unexpected fact that the clocks (three of excellent quality were used) run more slowly in the daytime than at night. To test this important hypothesis an extensive observing programme was entered upon. It embraces a large list of stars whose positions are already known with high precision. Each night's observations extend from about 9 p.m., to 5 a.m. in order to determine as well as possible the hourly clock rates during the night. The observing programme is not yet complete, but the results thus far reached confirm the earlier hypothetical conclusion that the clocks run faster at night than the 24-hour rates observed here from the year 1905 up to the present time would lead one to conclude. This means, concurrently, that the clocks run more slowly in the daytime than the 24-hour rates would indicate. This conclusion is of significance to all who are concerned with the accurate determination of star positions by fundamental meridian methods.

Mr. Tucker's observations of star positions and clock corrections made prior to 1905, recorded in three volumes of *Publications of the Lick Observatory*, will be utilized in further extension of this investigation.

The ultimate cause of the phenomenon is obscure. The three clocks are apparently not subject to a diurnal range of temperature large enough to account for more than five per cent of the observed anomalies. The very extensive meridian observations made here in the past twenty-eight years, on the differential system, are essentially free from deleterious effects from this unforeseen source, as they depend upon clock corrections obtained at or near the mid-period of each night's programme. The maximum error introduced in the observed right ascensions of the stars on this account would never exceed 0.01 second.

In the observations by fundamental methods, where dependence is placed upon the constancy of the clock rate through the twenty-four hours of the day, more or less, these errors would reach their maximum values between 0.02 and 0.03 second at about six hours from the mean epoch of the observations utilized for determining the clock corrections—that is, usually, near sunrise or sunset. This appears to be the explanation of the sunrise-sunset discrepancies mentioned at the beginning of this account.

This clock-rate variation within the twenty-four hours has been overlooked by many generations of observers, apparently because of its small size and of the errors existing in the catalogued right ascensions of the brighter stars. Systematic errors from this source can be eliminated by extending the fundamental observations through the full year, and by adjusting the "closing error" for the year to value zero.

Extensive study of the relative positions and relative motions of the stars in the Pleiades group, made by Dr. R. J. Trumpler, Assistant Astronomer, showed the necessity for removing the effects of minute errors in the declination scale values as determined from an earlier series of observations made elsewhere. For this purpose Mr. Tucker and Dr. Trumpler observed the declinations of a considerable list of Pleiades stars with the meridian instrument. The results of these observations, utilized by Dr. Trumpler, have had the effect of removing the troublesome discrepancies.

Dr. Tucker's meridian observations, extending from 1893 to the present time, with only one considerable interruption of three years while he was in the employ of the Carnegie Institution of Washington, have had for their chief purpose the accurate determination of star positions and proper motions. Each night's series of observations has also yielded, and could be made to yield, as a by-product, an observed value of the geographic latitude of the point of observation. In the past two years, as opportunity permitted, Dr. Tucker has studied his values of latitude for the purpose of constructing empirical formulae which would represent the latitude variations of the Lick Observatory. These formulae

as yet unpublished, are almost identical with those determined by the International Latitude Association from observations made at their series of observing stations located on the same parallel of latitude, one each in California (Ukiah), Japan, Turkestan, Italy, Maryland, and Ohio (Cincinnati). The probable errors attaching to Dr. Tuckers values of the parameters in the equations are of course larger than is the case with the international formulae, for the obvious reason that Dr. Tucker's latitude results are by-products obtained very indirectly, whereas the international results depend upon differential observations made exclusively for the determination of latitude variations.

In the past year Dr. Tucker has studied the variations of geographic longitude at the Lick Observatory on the basis of readings of the spirit level used in connection with the meridian instrument. The empirical formula for the longitude variations is in good accord with the known irregularities in the rotational phenomena of the earth, as a necessary concomitant of the observed latitude variations.

The 36-inch refractor has been used, two nights per week on the average, by Dr. R. G. Aitken, Astronomer, in the continued observations of double stars. Eight hundred pairs of stars have been measured as to their respective position angles and angular separations. These are chiefly double stars of his own discovery, but a few other close pairs known to be in rapid orbital motion were included. Dr. Aitken's programme of remeasuring the relative positions of the component stars in the more than three thousand pairs discovered by him is now within ten per cent of completion. If the weather in the coming fall and winter is prevailingly favorable this programme should be carried to essential completion. Opportunity will then be offered for a double star study of unusual fruitfulness.

Dr. Aitken has computed the orbit of the double star Hussey 1176, whose period of revolution proves to be 15.5 years. He has also devoted considerable time to the extension of Burnham's *General Catalogue of Double Stars*. Following the publication, in 1906, of Burnham's celebrated two-volume catalogue, which listed and described all known double stars situated north of declination 31° S, the author continued to collect and classify new double star data, with a third volume in view, until 1913, when old age incapacitated him for further activity. Professor Burnham transferred this service to Professor Eric Doolittle, Director of the Flower Observatory, University of Pennsylvania, in 1913, with the request and understanding that Dr. Aitken should be Professor Doolittle's successor in this work, if the latter were obliged to forego it. Dr. Doolittle died in September, 1920. The manuscript card catalogue of double stars, together with a valuable collection of double star volumes, was accordingly transferred to Dr. Aitken. Suitable hardwood filing cases for all of this valuable material were designed and constructed. It is hoped that the

third volume of the catalogue, under Dr. Aitken's editorship, may be issued not later than the year 1925. In a year or two from date some clerical assistance will be desirable for the transferring of observational data from the card catalogue to the printer's manuscript.

Aside from the first quarter of each Saturday night, when the visiting public is received and instructed, the remaining time of the 36-inch refractor has been devoted to the photography of stellar spectra. Four hundred and twenty-two spectrograms for determining the velocities of approach and recession of celestial objects have been secured within the year. The exposure times have varied from a few minutes for the brighter objects up to as much as fifteen hours for faint objects. Nearly all of these spectrograms were secured with the three-prism Mills spectrograph, the observers, with few exceptions, being J. H. Moore, Associate Astronomer, H. Thiele, Assistant Astronomer, R. J. Trumpler, Assistant Astronomer, W. W. Campbell, Director and Astronomer, and H. M. Jeffers, Fellow in the Lick Observatory. The plates, developed by Mr. Thiele, have been definitely measured and reduced, chiefly by Miss Hobe, Assistant in the Lick Observatory, and in small part by Mr. Thiele. In the progress of this work about twenty stars have been found to vary in velocity, thus indicating that they are not single stars, but are binary systems. In most of these systems only the spectrum of the brighter component has been recorded, but in a few the spectra of both components are observable on the plates.

The extensive programme for determining the velocities of approach and recession of all stars brighter than 5.51 visual magnitude, situated between the north pole of the sky and declination -30° , may now be considered as complete, with the following exceptions: (a) The spectra of many blue stars of spectral classes Oe, B and A contain no sharply defined lines or bands, and they are therefore not measurable with the three-prism dispersion to a satisfactory degree of accuracy. Approximate velocities for a considerable proportion of these have indeed been determined, here and elsewhere, but we plan to observe these stars in the near future with one-prism or two-prism dispersion, as the conditions for the highest attainable accuracy may dictate. A programme of this nature should progress very rapidly, because the exposures will be short. (b) Several hundreds of the stars have been observed to move with varying velocities, due to the influence of close companion stars. For each such case a long series of observations, say from twenty to one hundred spectrograms each, should be secured as a basis for determining the orbital motions in the systems, and likewise the velocities of the centers of masses of the systems. Such series of observations have been secured here and elsewhere for between one-half and one-third of the known cases of variable velocity. Much fruitful work in the study of these systems awaits time and opportunity. (c) For six stars of those

brighter than 5.51 magnitude only one spectrogram each has been secured, and for about one hundred of the stars only two spectrograms each. The increasing of the observations to three each will be accomplished as opportunity offers in the next year.

Dr. J. H. Moore, Associate Astronomer, has completed a determination of the velocities of approach and recession of twenty of Secchi's fourth type (extremely red) stars, mainly from observations limited to one-prism dispersion by virtue of the faintness of these stars in the blue and violet regions. The obtaining of standards of reference for the measurement of the fourth type spectra to ensure against systematic error has been difficult. A system of cross checking with reference to several well-known velocities seems to assure that the errors have been reduced to a minimum. The average velocity of the twenty fourth type stars comes out as 18 kilometers, which is larger than the average velocities of the Class M stars determined by Dr. Campbell.

Dr. Moore and Dr. Campbell have determined the radial velocity of the planetary nebula N.G.C. I 2003, discovered after the completion of the extensive programme of nebular measures described in Volume XIII, *Publications of the Lick Observatory*.

Spectrograms of Nova Aquilae No. 3 with long exposures were obtained in June by Drs. Moore and Lundmark for a study of the form and structure of the green bright bands of nebium N_1 and N_2 . These bands were found to retain the form shown in the preceding two years, though interesting changes have occurred in their details. For example, the bands are now 2.6 angstrom units narrower than in 1919 and 1920. On the recent spectrograms the nebium bands are of dimensions corresponding to an image disk 5.0 seconds of arc in diameter. Dr. Aitken, measuring the diameter of the disk in the direct telescopic image, found it likewise to be 5".0. Observations dating from the sudden appearance of the nova in 1918 up to date, carefully studied by Drs. Moore and Lundmark, showed that the rate of expansion of the disk, from a point in June 1918, to its present size, has been decreasing slowly with the progress of time. The favorite hypothesis in explanation of this unusual nova has been that, in addition to a central stellar nucleus, we are observing a rapidly expanding gaseous atmosphere. If it is assumed that the great widths of the spectral bands of nebium (58 angstroms in 1920) are due to the radial velocity of such an expanding atmosphere, as a Doppler-Fizeau effect, then it is possible to deduce a value of the parallax of the nova, 0".002; a value which from other lines of evidence is believed to be of the right order of magnitude. However, a serious difficulty in the way of accepting this interpretation of the extremely wide bands still exists, for the $H\beta$ band of hydrogen, while equal in width to that of the nebium bands, is less than one-half as long as the nebium bands, an incongruity which has not yet received satisfactory explanation. Further, the decreas-

ing width of the nebulium bands, as shown by the recent observations, does not correspond in value to the decreasing rate of expansion of the diameter of the nova image.

Mr. W. H. Wright, Astronomer, has devoted his time exclusively to the study of novae, or temporary stars, having been relieved from essentially all other duty. Aside from the obtaining of an occasional spectrogram of a nova with the 36-inch refractor or the Crossley reflector, his work has consisted in the measurement, correlation, and study of the extensive series of spectrograms of the novae of the past nine years, obtained at the times of their apparitions by him and by others of the staff. These spectrograms are a mine of information on this interesting subject, and it is hoped that, as the study of each object is brought to a conclusion, the results may be issued as a succession of parts of a volume on the novae. Part 1 of Volume XIV, *Publications of the Lick Observatory*, twenty-six quarto pages, issued early in 1921, giving *A Preliminary Account of the Spectrum of Nova Ophiuchi (1919)* is a case in point. Minor studies concerning the subject of new stars have been made by Mr. Wright within the year, with results published in various astronomical journals. Amongst other conclusions, he was able to establish, in connection with laboratory researches made in Europe, that the characteristic phase in a nova spectrum, known technically as the 4640 stage, involves the enhanced spectrum of nitrogen.

Dr. C. D. Shane, former Fellow, continued until August, 1920, his studies *On the Spectra of the Class N Stars* as an extension of his thesis submitted three months earlier on the same subject.

Miss M. L. Heger, candidate for the degree of doctor of philosophy, extended through July her research *On the Behavior of the D Lines of Sodium in Certain Spectroscopic Binary Stars*, as described in my report of last year, in order to afford greater completeness. Her manuscript on this subject awaits publication.

F. C. Leonard, Fellow in the Lick Observatory, has devoted the academic year to a statistical and physical investigation of the spectra of the components of moderately close visual double stars. His observing programme was conducted with a light one-prism spectrograph attached to the 36-inch refractor. The individual spectra of the components of about seventy-five double stars were photographed, and the results thus secured have been classified in accordance with the Henry Draper spectral system. A simple instrumental device placed over the slit of the spectrograph enabled Mr. Leonard to photograph the spectra of the two components of a double stars simultaneously, and to give exposure times in proportion to their relative brightness. At the date of this report Mr. Leonard had reached the following conclusions: (a) The spectrum of the secondary component of a dwarf star is generally redder than that of the primary star, whereas the spectrum of the fainter component of a

giant star is usually bluer than that of the brighter one. In both cases the absolute difference in spectral class seems ordinarily to be a direct function of the disparity in magnitude of the components; practically zero when they are equal in luminosity (with a few exceptions, notably among the giant stars) and increasing as the difference in magnitude increases. (b) With some exceptions the spectra of the components of double stars are so related to each other that they conform to the Russell configuration with the stars plotted according to spectral class and absolute magnitude. In this arrangement the fainter component normally precedes the brighter one, regardless of whether the latter be a giant or dwarf, in the order of the Lockyer-Russell hypothesis of stellar evolution. (c) The difference in spectral class between the components of double stars appears to be independent of their projected linear separation in astronomical units. (dd) From the meager data available for the mass-ratio in a few binary systems (all dwarf stars) the difference in spectral class between the components shows a tendency to decrease as the ratio of the masses of the components approaches unity.

Dr. Bertil Lindblad, of the University of Upsala, Sweden, resided at the Lick Observatory during the month of March, to acquire experience in the determination of stellar radial velocities, and to study the ultra-violet region of certain stellar spectra as photographed with the Crossley reflecting telescope and attached spectrograph.

Dr. Knut Lundmark, Martin Kellogg Fellow, whose year of residence on Mount Hamilton began early in May, has undertaken several lines of investigation. With the Crossley reflector he has photographed the regions of suspected or reported ancient "new stars," and likewise the spectra of the faint stars in those regions, with the hope that some of the apparent novae may be identified as certain definite faint stars of the present date. His spectrograms of the nova of 1866, T Coronae, secured in June, have shown that the spectrum of this star is now of Class M, with bright lines or bands superposed. Shortly before reaching Mount Hamilton Dr. Lundmark had made the interesting observation that the several dozens of new stars observed in recent centuries whose accurate positions, with one or two exceptions, are known, and which are located within the boundaries of the Milky Way, are individually not situated within small regions rich in ordinary stars, but in the more vacant parts of the galactic structure. At Mount Hamilton he has found that Nova Aquilae No. 2, which appeared in 1905, has a comparatively dark region in the Milky Way as its background.

Miss Priscilla Fairfield, Fellow in the Lick Observatory, has resided almost exclusively in Berkeley this year. She received the degree of Doctor of Philosophy in May. Her thesis was entitled *Indeterminate Cases in the Orbit Problem*.

H. M. Jeffers, Fellow in the Lick Observatory, completed the requirements for the degree of Doctor of Philosophy in December, 1920. His thesis was entitled *An Investigation of the Orbits of the Two Components of Taylor's Comet 1916-I*. Mr. Jeffers resigned the fellowship as of date December 31, 1920, to accept appointment on the faculty of the University of Iowa.

My last report described the principal work of Miss Edith E. Cummings, Fellow in the Lick Observatory during the preceding academic year as related to the construction of a photo-electric-cell photometer for use as an auxiliary to the 12-inch refractor in observing the brightness of stars, planets, etc. In the year just completed Miss Cummings has tested thoroughly the two photo-electric cells belonging to the Observatory installing the more sensitive and dependable one in the photometer. The mechanism necessary to connect the photometer on the 12-inch refractor together with several essential alterations at the eye end of the telescope and likewise a carriage for the quick and safe mounting and dismounting of the photometer, have been designed by Miss Cummings and M. A. Silva Instrument Maker, and constructed by the latter. All these parts are convenient in use and serve their purpose well. Miss Cummings has adjusted and tested the photometer, and has calibrated the rotating sector disks which serve to reduce the brightness of the brighter star of the pair under comparison. She has made observations of selected stars in the Pleiades group as a check upon the laboratory tests of the cell. She has observed stars of different spectral classes in order to determine the color equation of the photometer, and has made an extensive series of measures of the brightness of β Cephei, which varies through a small range in cycles of four and one-half hours each. The photometer appears to be entirely satisfactory, but considerable observation and study must be conducted before a description of the instrument and of the first results obtained with it can be embodied in a finished thesis.

Last year's report referred to Dr. Trumpler's comprehensive study of the Pleiades star cluster. All observational data were collected on the computation sheets preliminary to the least-squares solutions for the positions and proper motions of the stars, and solutions for about four hundreds of the stars were carried through. A discussion of the proper motions of the group-members, however, gave evidence of the presence of small systematic errors, such as affect the scale value and position angles. It was found that these errors must be inherent to the photographic measures made at the Allegheny Observatory three years ago, and that a new reduction of these measures would be necessary, based upon new observations for the determination of the photographic plate constants. Accordingly, forty-five stars suitably distributed over the cluster field, 6° in diameter, were observed with the meridian circle four times each (eighteen nights), by Mr. Tucker and Dr. Trumpler. The new reduc-

tions of the Allegheny photographs, using the new positions of the forty-five stars, seem to eliminate completely the errors referred to. For the central part of the cluster covered by the photographic measures with the 30-inch Allegheny refractor a larger number of the fainter reference stars was needed, and the relative right ascensions of 123 selected stars and the relative declinations of 110 selected stars were observed by Dr. Trumpler with the micrometer of our 12-inch refractor. Solutions for determining the systematic errors in the central part of the cluster field, from all observational data bearing upon this point, was under way at the end of the year. An examination of the proper motion data for all the stars in the cluster area down to certain limiting magnitude enabled Dr. Trumpler to separate the actual members of the cluster from the background stars unconnected with the cluster. A list of the 244 cluster members thus found, a discussion of their physical properties, and an investigation of the parallax of the Pleiades group as a whole, were embodied in a manuscript, now in the hands of the printer. A start was made in constructing an accurate scale of photographic and visual magnitudes by means of sequences of stars in the group. Several of the principal series of photometric measures were compared with each other and their relative scale and color corrections determined. The completion of this investigation could not be continued further, as the photo-visual magnitudes of these stars, under determination at the Mount Wilson Observatory, were not yet ready.

Two hundred and sixty-four observations with the wedge photometer attached to the 12-inch refractor were made in order to determine the visual magnitudes of the stars in the outer parts of the cluster, most of which had not previously been accurately observed for brightness.

Late in June, when the Pons-Winnecke comet was most favorably situated for the purpose, the south-eastern sky was observed during the latter part of one night each by Mr. Thiele and Dr. Trumpler to record meteor trails with reference to determining whether any of these trails were from objects moving in paths parallel to the orbit of the comet. About thirty meteors were charted by each observer, and twenty per cent of these appeared to be moving along lines approximately parallel to the comet's path. It could scarcely have happened that meteors merely sporadic would be moving along lines so nearly parallel to that of the comet's motion. A further statement on this subject must be delayed until reports of similar observations made elsewhere are at hand.

Dr. Aitken observed the position of the Pons-Winnecke comet on four nights and of Comet Reid on one night, the results being communicated to the Berkeley Astronomical Department for use in the orbit determinations.

Last year's report described in mere outline the work of Dr. H. D. Curtis, then a member of the staff, in relation to the Einstein theory

of relativity. Dr. Curtis left Mount Hamilton on July 5th, to assume his duties as Director of the Allegheny Observatory, without carrying his measures and computations to completion, and without further opportunity to continue them. Although the photographs secured for the 1918 eclipse of the sun were made with instruments of imperfect quality and the photographs obtained at the eclipse of 1900 were likewise imperfect and secured before the Einstein hypothesis existed, yet it seemed to me that all possible efforts should be made to extract from these plates whatever evidence they might contain as to the validity of the Einstein theory. In June, 1920, I had suggested that the eclipse plates and the corresponding night plates of the critical eclipse region should be compared, as to the positions of the stars common to both day plates and night plates, by referring them to an intermediate plate of plate glass ruled with short diamond lines, east and west, and north and south, corresponding to each star position. My first opportunity to proceed with the measures came in August. (I was able to improve the method of illuminating the plates, thereby contributing to the accuracy of the results, by arranging that an electric light bulb with suitable ground glass diffusion, should be placed successively in line with each star image under measurement, and further to devise other improvements in methods.) It was found, however, that the night plates secured in January, 1919, as comparison plates for the eclipse of June, 1918, were over-exposed and that the measures of the star images have suffered slightly in accuracy. It was determined to secure a new set of night plates as soon as the eclipse region of the sky should come into observing position, in November, 1920. The eclipse lenses with suitable camera tube and plate holders, were accordingly mounted on the side of the Crossley reflecting telescope for this purpose. Unfortunately, the winter of 1920-21 was exceedingly unfavorable and it was not until the middle of February of this year that suitable photographs of the eclipse group of stars were obtained. All of my available time, from the middle of February to early June, was devoted to the measurement of the two eclipse plates of 1918 and the two corresponding night plates; likewise of two photographs of the 1900 eclipse obtained with the 40-foot camera and a corresponding night plate secured in 1918 at Mount Hamilton by Mr. Curtis; and also of four photographs of the 1900 eclipse obtained by Professor Burekhalter of the Chabot Observatory and Oakland Schools, with cameras of 12 feet focal length, and corresponding night photographs of the eclipse region made by Mr. Curtis in 1918. All of my measures of these plates were duplicated successively and independently by Dr. Moore.

The 1918 eclipse plates and corresponding plates of 1921 were made with the Chabot lenses employed in 1900. These lenses are splendid for small fields, such as the photography of the solar corona

would require, but when it was a question of large fields, such as the solution of the Einstein problem absolutely demands, they were defective in high degree, in that the focal lengths for stars two or three degrees from the optical axis were very much shorter than for stars near this axis. The difference of focal length for a central star and for a star three degrees from the center is a full half inch. Unfortunately, as explained previously and elsewhere, there was no opportunity to discover this fact prior to using these lenses at the 1918 eclipse, owing to the expected return of our own lenses from Russia, in which expectation we were at the last moment disappointed. Had we known in advance that the lenses possessed this imperfection we could probably not have observed for the Einstein effect on that occasion.

Prior to measuring the eight eclipse plates the relative weights of results obtained from them were estimated as well as possible on the basis of the number and the distribution of star images, imperfections of star images, etc. The Chabot photographs of 1900 were considered to be of the greatest weight, and the most perfect one of the four Chabot photographs was accredited with double weight. The 1900 group of stars surrounding the eclipsed sun, in the Hyades cluster, was the same group which made the eclipse of May, 1919, so favorable for the testing of the Einstein hypothesis.

The measures of the eclipse and corresponding night plates were subjected to the necessary and proper computations by Miss Hobe and Dr. Rumpler, in order to deduce the value of any observed Einstein effect. One of the 1918 plates, and the two 40-foot plates of 1900, yielded results comparable in value with Einstein's prediction. The other 1918 plate and the Chabot plates of 1900 failed to show the existence of any Einstein effect. The most favorable case of all, namely the best one of the four Chabot plates, submitted to a variety of critical studies, persisted in its refusal to verify the Einstein theory.

The only safe conclusion to draw from this study is that the Lick Observatory photographs of 1900 and 1918 and the Chabot photographs of 1900 combined do not decide the interesting question. I am neither willing nor able to say that their evidence against the existence of the Einstein effect is appreciably stronger than it is in favor of the effect. The British eclipse results of 1919, depending upon photographs secured with one instrument in Brazil, agreeing with the demands of the Einstein theory, thanks to the excellent grouping of bright stars around the sun on that occasion and to the use of a more perfect lens, appear to be of greater weight than those described above. So far as our work is concerned, the answer awaits decision at a later eclipse. Regent William I. Crocker has most generously provided funds for the securing of lenses adapted to the needs of the Einstein problem, for use at the eclipses of

1922 and 1923. Two of the four lenses are already in our possession, and tests show that their performance is up to expectation.

The work of the Chile Station of the Lick Observatory, on the summit of Cerro San Cristobal, Santiago, has been conducted in the past year with efficiency comparable to that of the pre-war period, under the supervision of Dr. G. F. Paddock, Acting Astronomer in charge of the Dr. O. G. Mills Expedition, with the assistance of Mr. C. M. Huffer, Assistant Astronomer. The spectrograms which are made the basis of velocity determinations of the southern stars are again of the highest quality and are obtained in satisfactory numbers. The results yielded by the southern station are of special value, because of the necessity for combining such southern data with similar results obtained by many observatories in the northern hemisphere, as a basis for the study of many problems affecting the entire stellar system. This work in Chile is conducted at present by virtue of the financial support generously afforded by Mr. Wm. H. Crocker, Mrs. Wm. H. Crocker, Mr. Ogden Mills, Mr. F. W. Bradley, Mr. A. B. Spreckels, Dr. Ambrose Swasey, and by an alumnus of the University of California who requests that his name be withheld. It is highly important that the continuance of the Chile observatory be provided for by means of a permanent fund.

Two or more spectrograms—in nearly every case several spectrograms—of every star south of declination 30° S and brighter than 5.51 visual magnitude, have been secured and measured in Chile, and the measurements converted into velocities of approach and recession. Two years of the Chile Station's activity should relate to the observation and study of southern spectroscopic binary stars, and several years to the study of southern objects of special interest, such as spiral nebulae, bright-line stars, etc.

The systematic corrections to all series of velocity observations of stars at Mount Hamilton, and of all series in Chile save those of the past year, have been determined by means of extensive inter-comparisons conducted by Dr. Campbell.

The number of visitors to the Lick Observatory, not only on Saturday evenings, but in the daytime, and especially on Saturday afternoons and Sundays, has been increasing at a rapid rate. It has been necessary to make extra provision for conducting them through the main building and for explaining to them the more interesting features of the Observatory.

Dr. Aitken delivered seven lectures within the year under the auspices of the Extension Division of the University, including three of the Conte Memorial Lectures in the Yosemite Valley.

Dr. Campbell was elected a Foreign Member of the Royal Society of Edinburgh.

Respectfully submitted,

W. W. CAMPBELL,
Director.

MEDICAL SCHOOL

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of the Medical School for the year 1920-1921:

The Medical School began the year with 225 candidates for the degree of Doctor of Medicine of which thirty-five were fulfilling the fifth year requirement. Throughout the year five students withdrew, leaving a final registration of 220 students of which thirty-four were fulfilling the fifth year requirement. Thirty students received the degree of Doctor of Medicine at the Commencement Exercises on May 11, 1921.

Applications for admission continue to be far in excess of maximum number for which provision has been made. An early increase to 100 students per class must soon be faced. This will call for considerable increase in laboratory space and in preclinical staff but especially in hospital facilities, clinical staff and equipment.

During the past year the necessity for uniting the preclinical (Berkeley) and clinical (San Francisco) divisions of the Medical School was the topic for discussion by the Regents, by Medical and University faculties, and by many friends of the school. The Regents reaffirmed their former decision to unite and strengthen the Medical School in the City of San Francisco on Parnassus Heights.

In view of the ever increasing premedical subject requirements it was found that over sixty per cent of the students voluntarily take three years premedical work. The faculty has recommended that three years of collegiate work be required for admission to the Medical School, effective in and after August, 1922.

At the request of the Surgeon General, United States Army, the Regents have established a Reserve Officers' Training Corps Unit for Medical Officers and Major Harry G. Ford, Medical Corps, U. S. A., has been detailed as Assistant Professor of Medico-Military Science and Lectures. Membership in this corps is voluntary on the part of the students.

The Department of Pathology and Bacteriology has been divided into two departments, a Department of Bacteriology and Experimental

Pathology, (Berkeley) with Dr. Frederick P. Gay, Professor of Bacteriology, as its head, and a Department of Pathology, (San Francisco) with Dr. Granville Y. Rusk, as its acting head.

By action of the faculty, medical students may now fulfill the five year requirement at the end of any half-year instead of at the end of a year and a half as previously provided. This ruling enables medical students to do advanced work and research in any preclinical division, receiving the fifth year credit for satisfactory accomplishment.

Through the generosity of the heirs of John C. and Edward Coleman, a fund known as the "John C. and Edward Coleman Memorial Fund" has been established in connection with the Department of Laryngology, Otology and Rhinology. It is contemplated that the income from this fund will be utilized "in the study of problems relating to deafness, for the investigation of its causes, to provide adequate measures therefor and curative and palliative treatments thereof; and to take measures for developing a sympathetic understanding between the public and the deaf."

One new scholarship and one new loan fund have been established during the year, the former known as "Base Hospital No. 30 Scholarship" and yielding about \$350 per year, and the latter known as "Constantine J. Hering Loan Fund," provided through the generosity of Mr. W. E. Hering.

The following scholarships have been awarded for the year 1921-22:
 Base Hospital No. 30 Scholarship—Ernest G. Allen.
 Sheffield Sanborn Scholarships—F. S. Smyth, R. T. Trotter.
 Constantine Hering Loan Fund—Norman N. Epstein.
 Mary J. Watson Scholarship—Mathew N. Hosmer.
 Marjorie Greene Foster Scholarship—H. P. Smith.

The announcement of the death of Dr. William B. Lewitt caused widespread regret. For many years Dr. Lewitt held the Chair of Professor of Pediatrics and at the time of his demise was Professor of Pediatrics, Emeritus.

Reports of the sub-departments are appended hereto.

Respectfully submitted,
 GEORGE H. WHIPPLE,
 Dean.

SUMMARY OF MEDICAL SCHOOL REPORTS

SUBMITTED TO THE DEAN BY DEPARTMENTS

Anatomy.—The past year has been a profitable one in the teaching and research activities of the Department of Anatomy. Mention was made in the last report of the completion of two memoirs, one by Dr. P. E. Smith, Assistant Professor of Anatomy, and the other by Dr. J. A. Long, Associate Professor of Embryology, and Dr. H. M. Evans, Professor of Anatomy, concerning respectively the experimental embryology of the endocrine glands and the physiology of reproduction. Both lines of effort have been continued.

Professor Smith, in conjunction with Dr. Garnett Cheney, has reëxamined certain evidence which was brought forward to show that the administration of a commercial preparation of the anterior lobe of the hypophysis gives effects characteristic of thyroid administration, i.e., accelerated metamorphosis of amphibian larvae. Professor Smith refers the acceleration of metamorphosis, which certain of these commercial products produce, to a contamination of the latter with some form of organic iodine such as is present in the thyroid gland itself, and has thus been able to show the invalidity of one of the arguments for the vicarious functioning of these two glands of internal secretion. In order to test the true endocrine nature of the upset due to ablation of the anterior hypophysis in tadpoles, Dr. Smith has produced parabiotic unions of normal and hypophysectomized larvae. In all of these instances union with a normal mate decreases the extent of the changes produced by the operation. Under these conditions, both members of the parabiotic pair may complete metamorphosis. When the animals had been fused by the tail stalk, metamorphosis naturally resorbed this union and liberated the pairs, and in these instances the hypophysectomized larvae almost immediately succumbed. Such experiments would appear completely to establish the fact that the anterior lobe of the hypophysis is essential to life. In all of the cases in which its removal from adult animals has been accomplished by surgical means it has been possible to urge an explanation in some injury to the brain or other neighboring structures. These objections cannot be applied to these ingenious experiments. Professor Smith is continuing work on the endocrine system of amphibian larvae and, in particular, on the effect of transplants in ameliorating ablations of certain of these organs.

The further work of Professors Long and Evans on the ovarian cycle of the rat was summarized in a number of abstracts presented to the American Association of Anatomists at their meeting, March 24, 1921. These concern the proportion of ova producing full-term young in the rat; the production of the condition of "pseudopregnancy" by inferile coitus or mechanical stimulation of the cervical canal in the rat; characteristic histology of the vaginal mucosa during lactation; the reduction of deciduomata during lactation; the rapid maturation of the ovary by transplantation of the youthful gonad to adults; the association of continued cornification of the vaginal mucosa with the presence of large vesicles in the ovary and the absence of corpus formation. One of the notable new features contributed by this work has been the further and very convincing evidence of the relation between the mature Graafian follicle and the exhibition of oestrus, for animals in which

oestrus is greatly prolonged exhibit greatly enlarged follicles and degeneration of old lutein tissue. At the same time other reports were made on the relation between ovulation and the endocrine organs and in particular on the effect of thyroid feeding on the oestrous cycle of the rat; the effect of thyroidectomy on the oestrous cycle of the rat; the effect of feeding the anterior lobe of the hypophysis on the oestrous cycle of the rat; the effect of the anterior lobe administered intraperitoneally upon growth, maturity and the oestrous cycles of the rat. The most remarkable effect of endocrine therapy thus far established has been the almost complete obliteration of oestrous phenomenon when the anterior hypophyseal substance is given intraperitoneally. At the same time these animals exhibited the formation of ovarian corpora lutea, apparently from immature follicles, so that the repression of oestrus may be interpreted as really an acceleration in the luteal transformation of the follicle. We are planning to continue these studies and, in particular, to accomplish parabiotic union and also to see the effects of the testicular hormone upon ovarian activity.

One of the most interesting of the developments of the work on the sex cycle has been an attempt to investigate the relation between ovulation and nutrition. The department has been fortunate in securing a grant from the American Red Cross for the support of this work, which has, perhaps, some timely import in the widespread reduction in fertility in Europe consequent upon reduction in the food supply. Dr. Evans in conjunction with Dr. Katharine S. Bishop, Instructor in Anatomy, has been concerned in establishing the ovulatory rhythm in animals which have been maintained on a constant and adequate food ration and the effect on the rhythm of changes in the proportions of the food protein, carbohydrates, salts, the so-called inorganic traces and vitamins as well as of the vitamins Fat soluble A and Water soluble B. Advantage has been taken of the experience and advice of distinguished workers in nutrition, among others of Drs. E. V. McCollum, L. B. Mendel, T. B. Osborne, H. C. Sherman, and H. Steenbock. In addition, experiments have been undertaken in quantitative as well as qualitative nutrition with the demonstration of grave impairment of the reproductive rhythm and its reestablishment on refeeding.

Dr. V. E. Emmel, Associate Professor of Anatomy, has continued his studies in haematology. He has investigated the relations between larval respiratory gill structures and the occurrence of nonnucleated erythrocytes in *Batrachoseps attenuates*. He finds that a sufficient slow or true capillary circulation does not occur in the gills of these larvae of this amphibian, in contrast, for instance, to the condition obtaining in *Aneides lugubris*, and suggests that the development of this condition of nonnucleated erythrocytes, remarkable in the Amphibia, is an adaptative, compensatory device for the increased oxydation which the thin nonnucleated erythrocytic discs can furnish. Professor Emmel has also been concerned with exact studies on the development and proportion of the blood elements in the rat and especially with the changes due to normal alimentation and to starvation. His research will probably also be extended so as to include other aspects of the relation of the blood elements to nutrition.

Dr. R. O. Moody, Associate Professor of Anatomy, has been the recipient of a generous grant from Dr. Norman Bridges for the continuation of his studies upon the position of the abdominal viscera and especially of the stomach and transverse colon. The possible application of röntgen studies to anatomy is a most extensive one and it

unfortunate that the department does not possess a plant and suite of rooms for routine teaching as well as research in this subject.

The physical division of the Medical School limits the time available for research activities on the part of medical students to a period of eighteen months. Furthermore, if research studies are to be attempted, they must be carried on along with the prosecution of a busy study programme. It is, then, a cause for particular satisfaction that several of such studies have been attempted and brought to conclusion during the last year: studies on an adaptation of the fire-assay method for the determination of gold and silver in animal tissues and a study on the rapidity of absorption of colloidal gold from the peritoneal cavity, S. Hanson; the cause of the effects produced by stimulation of the cervical canal in the rat, M. G. Freyer; cyclic changes in the mammary gland of the rat associated with the oestrous cycle, M. Sutter; the method of establishment of the vaginal aperture in the rat, K. O. Haldeman; on the relation of the living blood cells to dyes, M. E. Simpson. During the year R. H. Partridge, M. L. Montgomery and Miss M. E. Simpson have elected to fulfill the fifth year requirement in the School of Medicine by research work in the department. Mr. Montgomery has carried on studies on the effects of the bilateral extirpation of the superior cervical ganglion in the cat, rabbit, and rat. Miss Simpson has investigated extensively the relation of the blood cells to vital stains. Her studies point to the conclusion that many of the vital dyes collect in a definite set of granules in the living leucocytes; these granules may be termed "the segregation apparatus" and can be identified from refractile granules (probably lipoid), degeneration vacuoles, specific granules, and mitochondria. She has shown the widespread occurrence of this reaction and the fact that it may be used to distinguish more clearly than has hitherto been possible the group of so-called transitional leucocytes or monocytes. She has also investigated the relation of the blood cells to various forms of intravenous medication, especially the administration of vital benzidine dyes, protein and particulate matter.

Largely due to the unusual cost of materials incident to the war, the department has not replaced or kept in repair its histological and neurological loan collections or the osteological collections. It is now highly necessary to have these put in satisfactory condition. The department has at no time enjoyed the possession of special funds in its budget for the prosecution of research. However, by appeals to the Research Board of the University and to the generosity of other extraneous agencies, grants totaling over six thousand dollars were secured during the year 1920-21. Continuity of research effort can hardly be secured without dependence upon some portion of this aid as a regular part of the support of the department.

Biochemistry and Pharmacology.—The most important change in the staff of the Department of Biochemistry and Pharmacology is the absence on leave of Dr. E. S. Sundstroem, Instructor in Biochemistry, who is continuing in tropical Australia the work which he has been carrying out in this department on the effects of tropical conditions (artificial) on the life and functions of animals. It was not possible to fill his place last year but a suitable substitute for the ensuing year has been secured in Dr. M. W. Dunn, at present a member of the department of Biochemistry of the University of Illinois.

The department is growing rapidly and the lack of space is being felt more and more acutely. In spite of the loan of the laboratory in the Fertilizer Control Building, we have had to refuse admission to the laboratory class of a number of academic students who wished to take the course. The class has outgrown the lecture room in the Pathology Building and the lecture course this year was given in the lecture room of the old Chemistry Building. This room is so far away from our quarters that lecture demonstrations had to be abandoned. There is no space at all available for the use of advanced and research students during the second half year, and it is here we feel that the University and the department are losing most heavily. The department has been much impressed by the high grade of its students, most of whom are eager to proceed further in the field.

The staff of the department has continued active in research. Dr. C. L. A. Schmidt, Assistant Professor of Biochemistry, has continued his studies on the antigenic properties of the proteins, as follows:

(a) Immunological experiments with catalase, the work being carried out in coöperation with Dr. T. C. Burnett, Assistant Professor of Physiology. *J. Immunology*. (In press.)

(b) Further work on the "antigenic" properties of hemoglobin was carried out with the help of Mr. H. C. Shepardson. (To be published shortly.)

(c) Studies on the antigenic properties of the silk proteins. This includes sericin and fibroin. (The work is not yet complete.)

(d) Studies on the effect of heat on the antigenic properties of the proteins. *J. Immunology*. (In press.)

(e) A new and cheap source for glutamic acid. This work was carried out in coöperation with G. L. Foster, Associate in Biochemistry. Results published in the *Proc. Soc. Exp. Biol. and Med.*, 1921, 18, p. 205.

(f) Studies on the properties of taurin. *Proc. Soc. Exp. Biol. and Med.*, 1921, 18, p. 204.

(g) Work on the estimation of the bile acids in bile and in urine has also been carried out during the past year. With the coöperation of Mr. A. E. Darrow a method for the estimation of bile acids in bile was published in the *Jour. Biol. Chem.*, 1921, 45, p. 415. With the coöperation of Mr. Merrill considerable progress towards the estimation of the bile acids in urine has been made.

Dr. Sundstroem as noted above has been on leave in tropical Australia working out in a practical way on human beings certain factors in adaptation to tropical environment on which he had conducted preliminary experiments with animals in this laboratory. This work promises to have an extremely important bearing on immigration in the tropics. With Dr. Bloor, Professor of Biochemistry, he has published work on *The Physiological Effects of Short Exposures to Low Pressures*. *Jour. Biol. Chem.*, 1920, XLV, 153.

G. L. Foster has been engaged in work on the metabolism of the carbohydrates, in particular with certain peculiarities of the urinary Dextrose : Nitrogen ratio in various animals; also work with Dr. Schmidt as noted above.

Dr. Bloor has completed work as above with Dr. Sundstroem; an article on *Blood Phosphates in Experimental Anemia*, *Jour. Biol. Chem.* 1920, XLV, p. 171; with G. M. McKellips and I. M. De Young on *Blood Phosphates in the Blood of Infants*, *Jour. Biol. Chem.*, June, 1921; a *Outline for a Classification of the Lipoids*, *Proc. Soc. Exp. Biol. and Med.*, 1920, XVII, 138. The following are in press: Chapter on Normal

Fat Metabolism for a publication on Metabolism and Internal Secretion, edited by Professors L. F. Barker, H. O. Mosenthal and R. G. Hoskins, Appleton; *Methode Nephelometrique pour la Determination de l'Acide Phosphorique et de ses Composes Contenues en Petite Quantite du Sang*, Bulletin de la Societe de Chimie Biologique, of France.

Experimental work has been completed for an article on Lipemia, and almost completed on a method for the determination of fat and cholesterol in the blood.

In September, 1920, Dr. Bloor was made a member of the Societe de Chimie Biologique de France.

Instruction in the laboratory work in pharmacology has been difficult and unsatisfactory, both for the students and the instructor, due to the fact that student assistants only have been available. Additional laboratory equipment is also to be desired. Dr. G. W. Clark, Instructor in Pharmacology, has published the following papers:

Effect of Hypodermic and Oral Administration of Calcium Salts on the Calcium Content of Rabbit Blood, Jour. Biol. Chem., 43, p. 89, 1920. *The Effects of Citrates, Malates and Phosphates upon the Calcium Balance and the Calcium Content of the Blood*, Proc. Soc. Exp. Biol. and Med., 1921, p. 165. With the help of a graduate student, further investigations as to the nature of Oocytin has been in progress. If funds are available for the necessary reagents the work will be continued during the coming fall term. The investigations of Calcium metabolism are being continued.

Library.—Of the 1080 volumes accessioned during the year, ninety-eight have been by purchase, 316 by binding, 650 by gift (including 104 by exchange), five from the University Hospital and eleven from an unknown source. The sum represents a decrease of 32.93 per cent over that for the previous period. This is due, in part, to the financial situation and, in part, to the fact that gifts to the Library were fewer and contained a smaller number of titles not already found on our shelves.

The Library now contains approximately 10,700 volumes, of which 3702 are accessioned. (The number of withdrawals has not been deducted.) It has, further, 17,200 dissertations, 6600 reprints (exclusive of the several thousand from the U. S. Public Health Service) and a document collection that is worthy of mention, composed of bound volumes, miscellaneous pieces of unbound material, and reprints. The library regularly receives 105 American and fifty-one foreign serials. In addition to these, there are forty-one publications in the nature of transactions, annual reports, and other occasional papers from societies, institutions and state and federal offices.

The attendance for the fiscal year was as follows: for the first half of the year the number of visitors was 7587, a daily average of 9.91; for the second half year the number was 8427, an average of 55.44. The total attendance for the year was 16,014. The daily average, 52.67 is an increase of 6.1 per cent over that of last year. Of the total, 535 were nurses and ninety-five were students in Public Health Nursing. The great decrease in the latter number from that reported a year ago is due to the removal of instruction in Public Health Nursing from the University Hospital to the University at Berkeley. For the first half of the year 2811 items were drawn from the library; for the second, 2742, making a year's total of 5553. This is an increase of 1474 or 36.11 per cent over that for last year. The average was 18.26.

In addition to a number of minor gifts, several collections of appreciable size and value have been given to the Library. Mr. Thomas J. Huntington, Jr., formerly a student in the Medical School of the University, gave his library of professional books. By this gift there were added sixty-four volumes of text and general reference books of comparatively recent date, and 123 reprints. The General Library of the University gave to the Medical Library all theses on medical subjects received through their exchanges with other universities. This year brought an accumulation of 1122 foreign theses, with sixty-seven other publications, dissertations and reprints of dissertations. As a memorial to Dr. William B. Lewitt, late Professor Emeritus of Pediatrics in the Medical School, his widow gave his medical library. One hundred and forty-eight volumes of first-class text and reference books were thus added. The largest and perhaps the most valuable addition of the year was the gift by the Panama-Pacific Exposition Company of the collection of medical books supplied by their publishers to the Emergency Hospital at the time of the Exposition. This library comprises 276 volumes of text and reference books, seventy-four of which are to be offered for sale, as duplicates. Among the thirty-seven friends to whom the Library is indebted for lesser gifts, special mention should be made of Dr. Howard E. Ruggles, Assistant Clinical Professor of Roentgenology, and of Dr. James W. Ward, each of whom has given eighteen volumes. Dr. Ward also presented to the Library an excellent mounted stereoscope with three sections of the Kelly Stereo Clinical plates and four of the Edinburgh Stereoscopic Atlas of Anatomy. These have proved of much interest. Dr. William P. Lucas, Professor of Pediatrics, has given generously of journals, reprints and miscellaneous publications. Several current subscriptions come to us through the kindness of Dr. Karl F. Meyer, Associate Professor of Tropical Medicine, and of Dr. Margaret Schulze, Assistant in Obstetrics and Gynecology, donors of reprints number 29.

Medicine—A review of the work in medicine for the past year shows a great improvement over the previous year. The deficiency appropriation for teaching beds at the University of California Hospital has made it possible to keep the medical wards running almost at capacity throughout the past nine or ten months, providing an abundance of unusually interesting clinical material for intern and student instruction. A full time instructor has assisted in the management of the service at the University Hospital. The laboratory facilities for interns have been improved.

At the San Francisco Hospital the situation remains practically the same as during the previous year. The general medical beds have provided a variety of teaching material which should be further increased during the coming year. The tuberculosis service has been called upon to an increasing extent for material for the instruction of students in physical diagnosis. The infectious and contagious wards have been used to advantage in the instruction of fourth year students.

Other hospitals affiliated with the University of California Medical School have been utilized to a greater extent than heretofore in the instruction of fourth year students, giving them an added opportunity of seeing more clinical material at first hand.

The Out-Patient Department in the University of California Hospital has gone ahead with a healthy development in the proper segregation of groups of diseases for special study. The Out-Patient Department now has in the special clinics some of the best instructors in

the clinical branches, and the students assigned to work in the Out-Patient Department have derived a great deal of benefit from personal contact with these instructors. During the coming year the department will be greatly benefited by the addition of a full time instructor in the Out-Patient Department who will also have charge of the routine instruction in Clinical Pathology, making the laboratory facilities in Clinical Pathology available for all students at all times. This instructor will also assist in the afternoon teaching in the third and fourth years. A position has also been made available at the San Francisco Hospital for a full time instructor who will assist in the afternoon teaching and carry on the routine of the department.

The department has at its disposal for the coming year a research fund which, although small, should encourage investigators in various lines of research. The clinical branches of the Medical School have been particularly weak in contributions to medical research and this fund should open the way for a proper encouragement of such work.

Obstetrics and Gynecology.—In general the conditions were greatly improved over the preceding year. With the provision of free beds for teaching cases, the service has grown steadily. The work is handled in a way that is theoretically ideal since the same staff sees patients in the clinic, follows them through the hospital for operation or delivery, and sees the final results later as they return to the clinic. We keep in touch with all cases through a follow up system so that no cases are lost to study. The final results are known.

Teaching in the wards, operating rooms and in the Women's Clinic, as well as in the class room, has gone on as usual this year. During the summer, students do volunteer work in the wards and clinic. The small size of the service makes it imperative for obstetrical work to be done during the vacation in order that the legal requirements be met.

The work at the San Francisco Hospital has shown great improvement. The teaching service has been strengthened with the addition of Dr. Margaret Schulze, Instructor in Obstetrics and Gynecology, who is at the Hospital throughout the day. Under this plan, students are now under constant supervision.

During the year papers have been read at the State Meeting in Coronado: one by Dr. Margaret Schulze, *The Passage of Meconium Intrapartum*, and one by Dr. William G. Moore, Instructor in Gynecology, on *The Precancerous Lesions of the Uterus*. Dr. F. W. Lynch, Professor of Obstetrics and Gynecology, read a paper on *The Radium Treatment of Cancer* before the meeting of the California Section of the American College of Surgeons and a paper on *Intrauterine Physiology* before the San Francisco Dental Society. Professor Lynch and Dr. Alice Maxwell, Instructor in Obstetrics and Gynecology, have prepared a monograph on *Pelvic Neoplasms* to be published in August by the Appleton Company.

Pathology and Bacteriology.—Owing to the artificial geographical separation of the work of this department which has endeavored to cover the entire natural history of disease, as well as to present bacteriology to academic students in its larger applications, the interests and type of instruction in the two divisions in Berkeley and in San Francisco has grown so different that a division into separate departments has now been requested. The work of the Department of Bacteriology and Experimental Pathology in Berkeley serves not only the

needs of medical students, but an increasingly preponderating group of non-medical students. These non-medical students, although for the most part represented in the large lower division course, are, in growing numbers, working for undergraduate majors or taking graduate instruction in our field. The non-medical students now comprise five sixths of the total enrollment; the medical students for last year numbering only forty, whereas there were 247 non-medical students. In this latter group, seventy-two were pursuing advanced work as undergraduates or graduates. The department not only does not regret the interest in medical bacteriology of those who are not fitting themselves primarily for a career in medicine, but feels tremendously encouraged by this interest in itself and as contributory to advance the field. Owing to the exigencies of the medical curriculum, the greater part of student research has always been done by non-medical students, and this in the purely medical aspects of bacteriology. The only way in which a medical student can now obtain time for research is by dropping out of his class in the medical school, and a small number of medical students are courageous enough to adopt this procedure.

The present laboratory facilities in Berkeley as regards space remain adequate. The department is desperately behindhand, however, in the matter of apparatus, and materials for routine instruction to say nothing of research, owing to their high cost during the war years. The budget for these items must be increased or the efficiency of the department will be greatly impaired. The amount of money allotted for technical assistance during the past year has, for the first time, been adequate. Research work would not have been possible had it not been for funds obtained for specific investigations both from the Research Board of the University and from outside sources.

The personnel of the department has not materially changed during the past year except in the advance of Dr. Ruth Stone to an instructorship. Various make-shifts have been resorted to to provide for something approaching adequate instruction in the work in Pathology at San Francisco which has never been properly developed owing to lack of funds.

Nearly every member of the department has been active in research during the past year and the list of publications actually printed or in press is submitted* as evidence of the work accomplished during the period and as indicating the problems that have been under investigation. It has been the most productive year in the history of the department.

Pediatrics.—The Department of Pediatrics commenced the year with a full house staff of residents and interns. With more free beds available for teaching cases it was possible to demonstrate interesting material to the third year students in connection with their lectures as well as to make the teaching of the fourth year sections more vivid than was possible the preceding year with the paucity of cases. During the second semester the fourth year elective sections had access to the best teaching material procurable in San Francisco. Small sections rotated between the children's wards and clinics of the University Hospital, Children's Hospital, where Dr. Rachel L. Ash, Assistant Clinical Professor of Medicine and Pediatrics, and Dr. Edith Brons, Assistant in Pediatrics, were in charge of the teaching; San Francisco Hospital under the guidance of Dr. A. H. Moore, Instructor in Pe-

* See Bibliography, pp. 232-276.

iatrics; and Mount Zion Hospital, where Dr. C. E. Gelston, Instructor in Pediatrics, was in charge of this work. An opportunity was also given these students to see the contagious material in the San Francisco Hospital as well as in the Childrens Hospital where Dr. E. C. Fleischner, Assistant Clinical Professor of Pediatrics, and Dr. Ellen S. Stadtmuller, Instructor in Pediatrics, were in charge of this branch of the teaching.

During the summer of 1920 postgraduate work in the wards and clinic was offered physicians who cared to avail themselves of this opportunity. The response has been very encouraging, for physicians have joined the department for this work from all over the coast as well as from the nearby towns. It is hoped that it may be possible to offer a more definite course some time in the near future.

Dr. William E. Carter, Assistant in Pediatrics, was able to take charge of a well organized Children's Out-Patient Department on the resignation of Dr. Gelston, who resigned to develop the childrens department in Mount Zion Hospital. Since the departure of Dr. Carter for a year of study and travel abroad, Dr. A. H. Moore, Instructor in Pediatrics, and Dr. M. L. Cohn, Assistant in Pediatrics, have been in charge of the Out-Patient Department. Several special clinics have been organized during the year for such specialties as asthma, lues, nephritis, nutrition, etc. A dental clinic also has been started where routine examinations of the children's teeth are made by men from the College of Dentistry. The equipment for the special work in these clinics has been purchased from funds contributed by members of the Auxiliary Board, and, properly equipped, they have added not only to the efficiency of the Out-Patient Department but have brought more and better teaching material to it. For the ten months of this year the attendance in the Children's Out-Patient Department has numbered 7079 (exclusive of the Speech Defect and Psychological Clinics) which will very nearly approximate near the pre-war attendance by the end of the year. Through the re-organization of the Auxiliary Board the department hopes to be able to develop the social service in the children's department and to have a follow up nurse and later a social service visitor who will devote their entire time to this work. With a larger staff of paid workers, giving more time to the Out-Patient Department the teaching work there could be still better developed.

The investigation of blood conditions during infancy and childhood commenced last year has been much extended during this year. With the addition of a full time research worker, Dr. Martha R. Jones, thanks to a grant from Regent William H. Crocker, it has been possible to undertake a number of research problems. Members of the department have coöperated in a study of the problems of the blood of the new-born, attacking it from the standpoint of morphology, chemistry, coagulation, urobilin and bilirubin. The results of these studies have been compiled and will be published soon in the American Journal of the Diseases of Children. Dr. Jones has the results of several studies ready for publication, one of which is about to appear in the Journal of Biological Chemistry. During the past year and a half the department has contributed interesting case histories from the department to the California State Journal of Medicine.

Service to the community has been continued, especially to such institutions as the Associated Charities, Nursery for Homeless Children, Protestant Orphanage, Sunshine Preventorium, both in Convalescent Home and the Juvenile Court, to which free medical supervision has been rendered.

During this past year funds, amounting to over 25 per cent of the budget, have been contributed to the department, through the personal efforts of Dr. W. P. Lucas, Professor of Pediatrics.

Physiology—During the last year there has been a reorganization of the Department of Physiology, consisting essentially in the reduction of the number of courses of instruction. This arrangement has given the staff considerably more free time for research without, in any way, limiting the scope of the work offered.

The researches conducted by various members of the staff have progressed satisfactorily.

Dr. S. S. Maxwell, Associate Professor of Physiology, with Miss Reston, continued his researches on equilibrium which have been in progress for several years.

Dr. T. C. Burnett, Assistant Professor of Physiology, followed up his earlier work on catalase and with Miss Prideaux investigated the effect of intravenous injection of adrenalin on the coagulation of blood.

Dr. R. Wulzen, Instructor in Physiology, studied peristaltic contraction in the earth worm.

Dr. Lillian Moore, Instructor in Physiology, continued her experiments on the mechanism of temperature regulation and with Miss Barker conducted a series of strength tests.

Dr. R. A. Gesell, Professor of Physiology, with E. W. Blair, Assistant in Physiology, and R. T. Trotter, Assistant in Physiology, studied the effect of hemorrhage on the response to anoxemia.

An increase in the allowance for expense and equipment for the past year has markedly facilitated research and permitted definite improvement in laboratory instruction.

The addition of a mechanic and a machine shop has permitted the staff to undertake problems which previously would have been impossible. The shop has been of equal value in the development of new laboratory problems, in instruction, and in the maintenance of the laboratory apparatus.

Surgery.—A retrospective view of the department's work for the past year reveals most prominently the same point as made in the 1919-1920 annual report—the lack of clinical teaching material due to the lack of teaching beds. There are now forty-six teaching surgical beds. The male adult beds, twenty-three in number, serving for General Surgery and its four sub-departments, should be increased at the present time by ten beds. The children's surgical beds which consist of a total of six beds due to the withdrawal of one ward of seven beds from this department for Private Pediatrics, should be increased at the present time by five beds. This is on a basis of teaching less than sixty students. A corresponding increase would be necessary should the classes become larger.

The teaching has otherwise been quite satisfactory. Closer contact with the student and a record of his own written histories and special papers to show the grade of work performed have been effectively carried out. It is hoped that more teaching can be done at the San Francisco Hospital this coming year.

During the year articles of medical research or observation have been published by the following: Dr. W. I. Terry, Professor of Surgery; Dr. F. Hinman, Assistant Clinical Professor of Urology; Dr. W. I. Baldwin, Assistant Clinical Professor of Orthopedic Surgery; Dr. H. C. Naffziger, Assistant Clinical Professor of Surgery; Dr. W. S. Frank-

lin, Assistant Clinical Professor of Ophthalmology; Dr. F. C. Cordes, Assistant in Ophthalmology; Dr. L. P. Player, Instructor in Urology; and Dr. C. P. Mathe, Instructor in Urology.

A system of following up post-operative patients is now effectively carried out with the present departmental secretarial help and it is hoped that this important work may be continued.

University Hospitals.—The substance of the reports of the clinical divisions of the Medical School for 1919-20 was the lack of teaching beds and consequent curtailment of teaching facilities. This situation at the end of the year was serious and unless it had been corrected and the maximum facilities of the present teaching units made available for 1920-21, teaching of the clinical work would have been so restricted as to have jeopardized the high standing of the school and would have denied to the students and interns that minimum amount of practical work which is considered necessary for their training and graduation and which is required by law for the practice of medicine. The Regents promptly authorized the creation for 1920-21 of a deficit, independent of the Medical School budget, to permit full utilization of the teaching facilities of the University Hospital. The result has been most happy and teaching in the hospital has been proceeding at maximum capacity and with every prospect that the deficit will not be more than approximately fifty per cent of the amount authorized by the Regents.

The teaching facilities of the present hospital are inadequate for the proper teaching of classes now in the Medical School. More wards and laboratory space are needed and two floors of teaching wards and accessory facilities should be added to the hospital. The interdependence of Hospital and Medical School activities in a teaching organization links the Medical School inseparably with the future of the Hospital and Clinics. Investigation of clinical problems and much research into problems of health and disease can be carried out only in hospitals which furnish both patients and the necessary facilities for such investigation and research. Only in such a combined organization can be most efficiently mobilized the best thought and effort in the advancement of better knowledge of disease, its prevention and treatment. Hospital facilities for proper instruction in the specialties and study of the problems relating thereto must be sought if eventually a properly balanced teaching curriculum is to be secured.

It is the general consensus of opinion that a teaching hospital can never support itself, and every attempt to make such an institution even largely self-supporting can end only in poor service and inferior teaching. A private service attached to a teaching hospital can contribute but very little toward the maintenance of the teaching units except at the cost of good service and consequent dissatisfaction. Therefore, these teaching facilities must be provided for in part by outside finance. All of the following sources of financial maintenance should be utilized in supporting these activities:

- (a) Income from endowments.
- (b) Gifts for, or available either directly or indirectly for, the purpose.
- (c) Sustaining funds or annual gifts.
- (d) State support.
- (e) Indirect county or city support.
- (f) Collections from teaching patients themselves.
- (g) Profit from private service.

The last two have now reached that maximum which can be legitimately expected or asked. The third and fourth possibilities are being developed and the recent Legislature has specified a sum of money which is to be used for these purposes. Effort must be made particularly to develop the first three.

The development of the Hahnemann Hospital into an industrial institution has been progressive. The attempt to combine an industrial unit in a hospital primarily private in character is fraught with difficulties and is far from desirable. The Department of Physiotherapy has been very well developed and has rendered together with the Department of Occupational Therapy most excellent service in the rehabilitation and re-education of those suffering from industrial accidents.

During the last year an affiliation with St. Luke's Hospital has been completed looking to the development at that institution of a strong social-medical health center.

LOS ANGELES MEDICAL DEPARTMENT

LOS ANGELES, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit herewith the report of the Los Angeles Medical Department for the year 1920-21.

The work of the institution has been going along in a very satisfactory manner. There has been a decided increase in students, and we have been able to give instruction to quite a large number of physicians who have been disabled in Government Service, and are now being cared for by the Vocational Training System.

We have added to our staff and likewise to the number of our clinics, and the attendance in the clinics has been very materially increased.

The work of the clinicians and the teachers has been given in a very faithful and efficient manner.

Respectfully submitted,

GEORGE H. KRESS,

Dean.

CALIFORNIA COLLEGE OF PHARMACY

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of the College of Pharmacy for the year 1920-21.

There has been an increase in the number of students, due, in part, to University activities throughout the country and to the replacement of occupations following the great war and epidemics which swept the world during the past four years.

The employment of women in pharmacy, made necessary during this period, has continued, resulting in a larger enrollment in the classes. This being an occupational school, self-support is a factor in the adoption of a pharmacy course by those who enter.

Colleges of pharmacy throughout the country are fostering a desire on the part of students to continue their courses beyond the second year. Successful candidates receiving the degree of Graduate in Pharmacy constitute the greater group, represented in this college by forty-six this year. Pharmaceutical Chemists consisting of three; and Bachelors of Pharmacy, but one, the latter being the first of this degree granted by the University, based on the newer classification of four years study. These last two groups represent the extreme in desire on the part of those who wish to advance in the scientific field of pharmacy.

The business side of our branch has been augmented by the appointment of Bruce Phillip as Lecturer in Commercial Pharmacy.

The lack of preparedness in military training has been acclaimed as a warning. It is my desire to increase the efficiency of our teaching staff and student body as applied to the military branch of the government by the establishment of a R.O.T.C. unit in the college.

This coming year is the last in which matriculants possessing but two years of high school work may join the classes looking to the degree of Graduate in Pharmacy. This is in keeping with the general movement of Association of Pharmaceutical Faculties to standardize pharmaceutical teaching in the beginning by accepting high school graduates only.

It is our desire to increase practical training by the establishment of a dispensing pharmacy in the basement of our college building. We await the vacating of rooms on the part of the Medical School temporarily granted to them by ourselves.

Respectfully submitted,

FRANK T. GREEN,
Dean.

PUBLIC HEALTH NURSING

BERKELEY, July 1, 1921.

To the President of the University.

SIR: The public health nursing course is directed by the Department of Hygiene. The programme has been completely organized for one full college year of training in the theory of public health nursing, supplemented by correlated academic courses.

A full intensive field course in practical work is covered by three hours of daily instruction under the guidance and supervision of instructors in the department. This work includes practical and intensive studies in every activity in the field of public health nursing. Our close relations with the Berkeley Health and School Departments, the Red Cross, the various clinics, health centers, dispensaries and nurseries, the juvenile courts, Metropolitan Life Insurance Company and other agencies give our students exceptional advantages.

We are especially indebted to the following agencies who have made generous donations for the support of our work:

The National Red Cross, \$6000.00 for one year for the establishment of Public Health Nursing Unit in Berkeley.

The Berkeley Board of Education, \$7900.00 to defray salaries for three supervisors, statistical clerk, supplies and office upkeep.

Berkeley Chapter of the Red Cross, \$1500.00 for a supervisor and \$394.41 for the upkeep of an automobile.

From the Junior Red Cross \$360.00 to equip and maintain a Well-Baby Clinic for one year.

The Metropolitan Life Insurance Company, \$416.00 from policy holders' fees.

From grateful patients, \$144.00. Making a grand total of \$16,714.41.

Of this sum the unit has disbursed \$15,369.57 on this work alone in the City of Berkeley. A statistical summary of the Nursing Units' field activities from August, 1920, to May, 1921, is appended.

The department certificated eighteen graduates at the 1921 commencement. All of these women were immediately engaged in public health work in the various agencies throughout the State.

Respectfully submitted,

ROBERT T. LEGGE,
Chairman.

STATISTICAL SUMMARY—AUGUST, 1920, TO MAY, 1921
DEPARTMENT OF PUBLIC HEALTH NURSING—FIELD ACTIVITIES IN BERKELEY SCHOOLS AND OTHER LOCAL AGENCIES.

	Inspections		Defects		Treatments							Baby Clinics		Visits						
	Rooms	Individuals	Physical Examinations	Weighted and measured	Found	Corrected	Exclusions	Impetigo	Ringworm	Pediculosis	Conjunctivitis	Poison Oak	Dressing	Other treatments	Telephone calls	No. clinics held	Total attendance	Home visits to pupils	Total visits	Total home visits
Aug.....	212	336	.....	.....	.....	29	18	56	18	3	2	6	501	81	46	8	17	65	.....	.....
Sept.....	401	1074	27	.....	303	43	97	285	71	19	6	42	303	212	514	8	21	484	1419	833
Oct.....	377	1054	69	.....	521	111	44	.....	20	.....	2	21	214	223	582	5	36	353	1766	1088
Nov.....	350	1611	179	547	386	103	67	231	26	15	1	51	375	223	594	4	8	458	1867	1212
Dec.....	218	1546	83	94	463	86	50	147	21	.....	.....	20	179	214	384	7	10	400	1671	1085
Jan.....	335	1228	92	.....	230	58	46	159	17	27	5	22	243	215	331	6	17	541	2436	1377
Feb.....	555	3436	97	.....	215	34	84	188	7	.....	12	58	1056	591	714	5	19	975	2778	1719
Mar.....	452	1544	139	557	406	130	85	98	3	8	17	57	934	338	701	8	9	1035	2799	1747
Apr.....	438	1261	982	507	621	192	126	79	6	9	1	44	644	417	740	8	5	954	2546	1554
Totals.....	3338	12640	1668	1705	3325	786	617	1243	189	80	44	321	4449	2514	4606	59	142	5265	17282	10615

UNIVERSITY OF CALIFORNIA PRESS

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of the activities of the University Press for the year 1920-21:

As will be seen from the appended table, the University Press has issued during the year 5149 printed pages.

The following volumes have been issued in the Semicentennial Series:

C. M. Gayley and B. P. Kurtz, *Methods and Materials of Literary Criticism: Lyric, Epic and Allied Forms of Poetry*. (Published by Ginn and Company.)

C. A. Kofoed and Olive Swezy, *The Unarmored Dinoflagellata*.

T. Petersson, *Cicero: a Biography*.

W. R. R. Pinger, *Lawrence Sterne and Goethe*.

L. M. Price, *English-German Literary Influences: Survey and Bibliography*.

Josiah Royce (J. Loewenberg, editor), *Fugitive Essays*. (Published by the Harvard University Press.)

One further volume, which is being published outside the University, will complete the set. The distribution of the Semicentennial volumes has been continued by the dispatch of forty-five sets to leading educational institutions in foreign countries.

About 9000 pages of manuscript are awaiting publication in our several scientific series. Some of this material has been in our hands for twenty months and cannot go to the printer for lack of funds. The University Press is not the only publication agency which is feeling the doubled cost of material and labor, but the work of scientific investigation, here as elsewhere, is seriously hampered by inability of authors to find prompt publication for their discoveries.

At all times the University Press is charged with many duties aside from publication and distribution of its scientific series. It reads editorially the Bulletins and Publications of the Lick Observatory, the Bulletins and Circulars of the College of Agriculture and of the Agricultural Experiment Station, the Weinstock Lectures, and the Sather Classical Lectures. It maintains the mailing lists of all official publications, save those of separate departments. During the past year, it has prepared indexes for many completed volumes of papers as well as

for all separate works which have gone through its hands; it has circularized most of its foreign exchanges in an endeavor to repair damage done them by losses and interruptions incurred throughout the war, and, finally, it has materially increased sales by the circularizing of institutions and selected individuals regarding its independent publications.

The Press does not plan any increase in the scope of its work, nor does it make any recommendation, save the plea for increased funds to enable it creditably and promptly to publish the approved papers of the ever increasing staff of officers and faculties of the University.

Respectfully submitted,

OLIVER M. WASHBURN,
Manager.

SUMMARY OF PUBLICATION AND EXPENDITURE

Series	Papers	Pages	Expenditures*
Agricultural Sciences	5	105	\$698.22
American Archaeology, etc.	5	205	2,318.10
Botany	3	286	1,173.08
Chronicle	4	496	1,976.45
Classical Philology	1	6	205.75
Geology	4	269	3,323.03
History	1	10	167.75
Mathematics	2	93	733.02
Memoirs	1	562	5,905.00
Modern Philology	1	65	296.72
Psychology	2	20	44.50
Record	2	46	169.50
Seismographic Bulletin	2	35	222.00
Semitic Philology	1	213	1,110.70
Semicentennial Series	2†	715†	5,133.88
Syllabus Series	17	1204	5,116.35
Zoology	8	819	6,115.34
	61	5149	\$33,709.39
Office assistance, editorial reading, etc.			3,998.96
Distribution			3,401.98
Office supplies and repairs			743.48
List of Publications and other advertising			541.92
			<hr/> \$42,095.73

* Money spent during the year on the series named, not the cost of the papers here listed.

† In addition to those included in other series, expenditures on such volumes as appear in other series have been prorated.

RECEIPTS FOR YEAR 1920-21

Agricultural Sciences	\$55.59
American Archaeology and Ethnology	300.16
Botany	119.32
Chronicle	72.92
Classical Philology	92.65
Economics	98.1
Education	65.19
Engineering	55.70
Entomology	68.86
Geography	3.95
Geology	363.35
History	343.53
Mathematics	15.93
Memoirs	827.75
Modern Philology	135.22
Pathology	14.95
Philosophy	10.87
Physiology	50.86
Psychology	35.14
Record	1.00
Seismographic Bulletin .....	.66
Semicentennial Publications	975.47
Semitic Philology	6.69
Syllabus Series	5,762.94
Zoology	114.36
Administrative Bulletins	2,284.53
Geological Survey of California	14.25
Library Bulletins	13.40
Lick Bulletins and Publications	84.48
Miscellaneous	9.06
	<hr/>
	\$12,068.23

RESEARCH BOARD

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit the following report of the Research Board for the year 1920-21:

The work of the Research Board has consisted mainly in considering requests for special grants to assist individual members of the faculty in their definite scientific investigations, and in making recommendations to the President in regard to these.

The money available during the current year has been:

From the General Funds of the University	\$4,000.00
From a member of the Class of 1886	2,500.00
From the income of the Searles Fund	2,000.00
Total	\$8,500.00

This sum is, of course, no indication of the funds available for research within the University, since a considerable portion of the budget for salaries, publication, and the maintenance of the library and the various scientific laboratories is essentially in furtherance of research.

For the current year requests for grants aggregating over \$30,000 were received. A statement of the grants recommended by the Board and made by the President is appended to this report. The problems whose investigation has thus been assisted are of the most varied character, concerned with the humanities as well as with the natural sciences, and falling within the fields both of pure and applied knowledge.

It is important that the survey of the needs for assistance be not delayed each year until the opening of the session in August. For the coming academic year, accordingly, a request has already been sent to each member of the Senate for a statement of needs.

In addition to recommending to the President grants for research, the Board, at the invitation of the President, has also advised him with regard to assisting members of the faculty who wanted to attend meetings of learned societies held at a distance from the seat of the University.

At the invitation of the Regents' Committee on Library, Research and Publications, the chairman of the three committees of the Senate that are concerned with this work have met with the Regent's committee. These conferences have been of great benefit. The persons responsible

for these different directions of work have become more fully acquainted with one another's fields, and they have made it possible to bring more definitely into a common plan the work of publication, the purchase of books and other documents for the library, and the work of the Board of Research so that all will contribute to scientific investigation.

In accord with the action taken in preceding years, by which there have been meetings of the representatives of various universities interested in research, steps have been taken to hold, at the University of California, in connection with the Pacific Coast meeting of the American Association for the Advancement of Science, in August, 1921, another meeting to consider ways and means by which the work of research may be furthered.

There is no question in the minds of the members of our Board as to the value of the work in which they have been engaged. They see constantly the difficulties which confront the members of the University interested in investigation, and they see that even with the modest means which have been granted them upon recommendation of the Board, many of these difficulties which otherwise would have been insuperable have been removed. And not only has the financial assistance been of help, but the encouragement thereby given has been important and has been felt beyond the individuals who have received these grants. Reports have been regularly requested in every case from recipients of grants, and these give proof of the stimulating value of this work.

The members of the Board who have given without stint of time and interest to this difficult undertaking are Professors F. Cajori, C. L. Cory, S. Daggett, S. Einarsson, C. B. Lipman, R. Schevill, G. H. Whipple, and W. E. Ritter. But it should in justice be said that whatever success has attended the Board's efforts, has, in a large measure, been the direct result of the work of Dr. John C. Merriam while chairman of the Board before his appointment as President of Carnegie Institution at Washington. During the year the Board, meeting with the President of the University, had the advantage of a conference with President Merriam while on his brief visit to California.

For the Board of Research,

G. M. STRATTON,
Chairman.

GRANTS MADE DURING THE ACADEMIC YEAR 1920-21

Agriculture:

C. W. Woodworth; research upon microscopical optics	\$300.00
E. B. Babcock; upon crepis (contingent upon grant from Carnegie Institution of Washington)	600.00
M. E. Jaffa; upon metabolism in poultry	350.00

Anatomy:

H. M. Evans and J. A. Long; upon ovulation of rats	200.00
H. M. Evans and K. J. Scott; upon ovulation and nutrition	870.00
P. E. Smith; upon the endocrine glands	400.00

V. E. Emmel; upon the development and behavior of blood-forming organs	150.0
H. M. Evans and J. A. Long; upon the oestrus cycle of the rat and other mammals	75.0
Anthropology:	
T. T. Waterman; upon the ethnology of Puget Sound	250.0
Astronomy:	
A. O. Leuschner; upon theoretical astronomy	312.0
Biochemistry:	
C. L. A. Schmidt; upon the antigenetic properties of protein	250.0
Botany:	
T. H. Goodspeed; upon inheritance of nicotiana	300.0
W. L. Jepson; upon the flora of California	900.0
W. A. Setchell and N. L. Gardner; upon marine algae of the Pacific Coast	400.0
Dentistry:	
J. A. Marshall; upon focal infection and dental caries.....	440.0
Economics:	
S. Daggett; upon the history of the Southern Pacific Company	150.0
French:	
R. Michaud; upon Emerson in his relation to French thought	275.0
Geography:	
R. S. Holway; upon recent uplift in the Coast Ranges of California	250.0
Greek:	
J. T. Allen; upon Euripides	150.0
C. M. Calhoun; upon the study of criminal law in Greece	100.0
History:	
H. E. Bolton; upon federal explorations for transcontinental railroads	40.0
Hygiene:	
J. N. Force; upon diphtheria virulence	150.0
Mathematics:	
F. Cajori; upon history of algebraic notations and upon history of the concepts of the calculus	50.0
Pathology and Bacteriology:	
F. P. Gay; upon Streptococcus in relation to empyema	300.0
I. F. Hall; upon anaerobic bacteria	100.0
Physiology:	
T. C. Burnett; upon catalase	50.0
R. Gesell; upon hemorrhage and shock	240.0
S. S. Maxwell; upon the functions of the vestibule	400.0
Physics:	
E. Dershem; upon measurement of X-ray wave lengths	250.0
Psychology:	
E. C. Tolman; upon inheritance of ability to learn	150.0
Political Science:	
David P. Barrows; upon Russian government and administration	100.0
Zoology:	
J. F. Daniel; upon effect of alcohol upon mice	130.0
J. F. Daniel; upon elasmobranch fishes	50.0
C. A. Kofoid; upon pelagic protozoa of the Pacific	263.0
Total.....	\$9,095.00

SCRIPPS INSTITUTION FOR BIOLOGICAL RESEARCH

LA JOLLA, July 1, 1921.

To the President of the University.

SIR: My report for the year July 1, 1920, to June 30, 1921, is respectfully submitted herewith, but owing to circumstances beyond my control the report will have to be brief and will be hardly more than an appendix of revision to the report of the preceding year.

First to be recorded in the events of the year at the Institution is the loss, sad and severe, of Mr. Ellis L. Michael, Zoologist and Administrative Assistant of the Institution almost from its foundation. He died at La Jolla on August 30, 1920, after a short, obscure illness.

A brief review and estimate of his work was published by the director in the journal *Ecology*, January, 1921. From this a single sentence may be quoted: "The significance for ecology, and especially for marine ecology, of Michael's life work, though now recognized as considerable, will, it seems probable, be more clearly and fully seen later on."

Oceanography and Hydrography.—All the phases of research in this field mentioned in last year's report have been kept up and vigorously pushed forward. Evidence of the growing appreciation of the significance of these researches by those best qualified to estimate their value, is seen in the prominent part taken by Dr. G. F. McEwen, Assistant Professor, Oceanographer and Curator of the Oceanographic Museum, in the section of Physical Oceanography of the Pan-Pacific Scientific Conference, held at Honolulu in August, 1920; by the attention these researches are receiving from the engineers of the water power companies of California; and by all technical students of west American climate and rainfall. As an illustration, both Dr. McEwen and Mr. Cummings took prominent parts in the half day's discussion of weather and precipitation in California at the San Francisco meeting, February, 1921, of the Pacific Division of the National Electric Light Association. The Director of the Institution was also invited to speak at this meeting on the broader aspects of water supply for California and the importance of oceanic researches in connection therewith.

This interest from the outside is taking substantial form in the way of aid to certain of the Institution's field work. The Volcan Water Company of San Diego is aiding the evaporation studies; the San Diego

Gas and Electric Company is taking temperatures, and water and plankton samples at Oceanside; and the Southern California Edison Company is doing the same at Santa Barbara. So definitive now are the problems in this field that such aids are highly valuable.

Planktology.—The outstanding single progressive event in this department during the year has been the publication of *The Free-Living Unarmed Dinoflagellata*, by Charles Atwood Kofoed and Olive Swezy (Memoirs of the University of California, Volume 5, quarto, 538 pp., 12 colored plates.) While the Institution cannot claim exclusive credit for the production of the magnificent monograph now before us, its share in it has been large and vital.

The issuance of this volume may be regarded as one focal point in the Institution's programme of investigation of "ocean pasturage" of the north-eastern Pacific; and I cannot refrain from quoting the sentence with which the introduction ends: "Few institutions and few localities in the world are so favorably located for the study of this group as is the laboratory at La Jolla." This pronouncement, based on the ample experience of the authors, goes far toward justifying the confidence which the supporters of the Institution have always had that very important results, scientific and practical, would finally reward persistent and capable research on the fundamental organisms of this part of the Pacific. Slow, in some ways tedious, and costly as the work is, by no other means can adequate knowledge of the producing methods and capacity of the sea ever be gained. And therein lies the renewed impetus and justification for pushing on.

The year's work by W. E. Allen, Biologist and Publicity Secretary, with such assistance as it has been possible for him to obtain, has progressed finely with the diatoms, the other predominating group of organisms of "ocean pasturage." The revision of methods of work begun by him last year has been carried further and the new methods are being used with gratifying results.

Reference was made under the heading of oceanography to assistance in the field work being given by various outside agencies. Plankton collecting is also benefiting by this, as was there mentioned.

Boat Work.—Both the oceanographic and the planktonic programmes have been notably furthered this year by a specially planned period of boat work eight weeks from May 15 to July 15, carried out under the direction of Captain W. C. Crandall, Business Agent.

Heredity and Environmental Influence.—Besides pushing forward the lines of work mentioned in previous reports, especially on hybridizing subspecies and on the inheritance of departures from bilateral symmetry, the year's work in this department has dealt with two new subjects that already have yielded interesting results and are promising for further efforts.

One of these is the supposed effects of dark backgrounds, like lava beds, on the color of animals inhabiting them. Critical study of an extensive series of deer mice collected by Dr. F. B. Sumner, Associate Professor of Biology, from lava fields and adjacent regions near Ludlow, California, failed to confirm prevalent expectation of darker color of animals living in such environments. Obviously the specific question raised bears on the general and important problem of environmental influence; and the excellent opportunities here presented for studying it ought to be, and, it is hoped, may be taken further advantage of.

The other new subject referred to concerns the method employed in the color studies just mentioned.

Dr. Sumner has been able to examine the color of his mouse skins far more critically than such specimens have heretofore been examined through the use of the Hess-Ives tint photometer. This is a rather complicated apparatus and requires care and skill in using. However, its accuracy and wide range of applicability in color investigations in natural history, suggest that it may come to play a large part in such work.

Mr. R. R. Huestis, candidate for the doctor's degree in genetics, and assistant, has rendered important aid in several of Dr. Sumner's investigations. Furthermore, he has undertaken to examine, really as an extension and refinement of studies begun by Mr. Collins several years ago, the minute structure of hair of the deer mice. The object now is to find whether unit character differentials between subspecies and mutants exist here. Miss Mary E. McDaniel, a special graduate student, has done most of the clerical work in so exhibiting the birth records of great numbers of mice as to make them reveal the sex ratios of these births, these ratios presenting interesting facts.

Exploration of the Pacific.—The Pacific Exploration Committee of the National Research Council mentioned in my last report has been reconstituted during the year and placed under the Division of Foreign Relations of the National Research Council—this because of the more than ever obviously international character of many of the problems of the Pacific. It is now called the Committee of Pacific Investigation.

The Director of the Institution is one of the two California members of the new committee, and by his sojourn in Washington, March to July, 1921, was able to take an active part in the committee's meetings.

The effort to bring the problems of the Pacific requiring scientific investigation onto a basis in our own and other nations bordering on this ocean, that will insure actual work toward their solution, is a task as large and difficult as it is important.

Library and Publication.—Five hundred and five volumes have been added to the library during the year, thereby bringing the total to 7781. New pamphlets added were 564, making the total 7165. The continued growth of the library has been largely due again this year to the special funds contributed by Mr. E. W. Scripps.

The problem of ways and means for publishing the results of the Institution's research work, referred to in my last report, has defined itself more clearly during the present year than it has been defined heretofore. For the present at least, while University funds for publication are inadequate, it will be the policy of the Institution to present few or none of its papers to the University Press except those from the plankton investigations. For the sake of uniformity and continuity it seems desirable that these should continue to appear in the zoological series. Every effort will be made to prepare the manuscripts of even these in a way that will make their publication possible at the smallest expense, consistent with the highest scientific requirements of publications of this class. This will involve, under the present scope of work, only the technical papers of Mr. Allen, Dr. C. O. Esterly, Zoologist, and Dr. Christine Essenberg, Librarian.

Museum, Aquarium, and Supply Departments.—Although the year has brought no radical changes in these departments, the growing significance of the museum and aquarium in an educational way is worthy of mention. This growth is shown by the increased appreciation of the exhibits by the public as evidenced by the increasing number of visitors, 16,000 having registered during the year.

Orders have been received by the Supply Department from all parts of the United States and from Australia, Canada, England, and Scotland. The Supply Department and the Aquarium have greatly benefited by the return to the service of the Institution of Mr. James Ross, Mechanician. His return has enabled Mr. Barnhart to devote more time to his proper duties as Collector and Curator, and to his work in connection with the Supply Department. The work of Mr. Ross has largely contributed toward keeping the Aquarium at a more uniform excellence than it has had before.

Visiting Investigators.—In no previous year, probably, has the Institution been used by visiting scientists so extensively, as during the year now closing. The list of these, with subjects of study, follows:

Dr. Ida H. Hyde, plankton; Dr. Myrtle Johnson and Mr. H. J. Snodgrass, general marine zoology; Dr. H. S. Reed, mathematical problems on soils; Miss Mary McDaniels, special work with Dr. Sumner; Professor H. H. Laughlin, genetics; Professor Harlow Shapley, ants; Dr. H. W. Norris, nervous system of sharks; Miss Hazel Field, lake plankton with Mr. Moberg; Miss Darlington, general collections; Miss Seorart and Miss Reinhart, general collections; Mr. M. Gerard, chemistry; Dr. E. G. Conklin, general biology; Dr. Walter P. Taylor, biological survey; Dr. C. T. Voorhies, work with Dr. Taylor; Dr. S. S. Maxwell, reflex action of sharks; Dr. A. Mann, diatoms; Dr. Tage Skogsberg, general; Dr. J. F. Danielsen, anatomy of sharks.

Special Gifts by E. W. Scripps.—Special contributions to the work of the institution made during the year by Mr. Scripps are as follows:

Assistance in Genetics	\$1,500.00
Assistance in Oceanography	1,500.00
Stenographic work	1,500.00
Library	1,800.00
	<hr/>
	\$6,300.00

Educational and Miscellaneous.—Brief reference has already been made to the Museum and Aquarium as educational agencies. But the subject merits further attention. To the 16,000 people more or less, who annually not only visit the collections but use them and the curator, Mr. Barnhart, and the guide, Mr. Michael, as a sort of dictionary of the marine and other life of the region, the information gained can by no means be insignificant. The fact that many hundreds of the visitors are from the far interior of the continent and have never before had a chance to see "in the flesh" any of the ocean's strange life, adds especially to the educative value of the collections—to those of the Aquarium most of all. But the constant utilization of the Institution's sources of information by naturalists, teachers, school children and others of the neighborhood, must also be truly valuable.

The experiment, begun in 1919 and mentioned in my last report, of designating a member of the scientific staff of the Institution as its publicity secretary is being continued with results that seem really promising toward utilizing the daily press for educating the public in science. For example, Mr. W. E. Allen, who is carrying on this experiment, is now able to report: "For the past year and a half ten or more widely distributed California newspapers have published once a month (or more often) certain articles on biological topics contributed by me"; and "many people of widely different occupation and interest have remarked about things they had learned from these articles."

As Mr. Allen has set up for himself a definite educative aim and standard in this work, and, besides contributing his "stories," is making study of various aspects of the general problem of newspaper science, it seems as though the effort is really worth while.

As yet it has not appeared desirable to Mr. Allen that this experiment should identify itself with the much more pretentious *Science Service*, the organization into which *The Science News Service* mentioned in my last report, transformed during the year.

During the year Dr. McEwen has given two lectures at the California Academy of Sciences, San Francisco, one of them being at one of the Sunday afternoon meetings which have been popular at the Academy for several years.

Dr. Sumner represented the University of California and the Institution in a Science Conference at the University of Southern California during the commencement of 1921, and was one of the chief speakers. He has published during the year as Bulletin 10 of the Scripps Institution, a significant semi-popular essay under the title *Heredity, Environment and Responsibility*. He took an active part, as did also Mr. Allen, in the newspaper campaign against the proposed laws hostile to experimental biology and medicine, in the state election of the fall of 1920.

The Director's position as president of *Science Service* and also of the Pacific Division, American Association for the Advancement of Science for 1920-21, has given him opportunity to address the public quite broadly from the platform and through the press.

Respectfully submitted,

WILLIAM E. RITTER,
Director.

SOUTHERN BRANCH

LOS ANGELES, July 1, 1921.

To the President of the University.

SIR: I have the honor to present the following report of the Southern Branch of the University for the year ending June 30, 1921.

A considerable enlargement of our work was made possible by the Regents allocating to us \$100,000.00 to supplement the small amount which the legislature had provided for Junior College instructors here. This generous addition to our funds enabled us to fix the average number of students we could care for during the year at 1000 in the Teachers' Courses and 750 in the Junior College Courses. Our figures of enrollment for the two semesters are as follows:

FIRST SEMESTER

Junior College

	Men	Women	Totals
Freshmen	284	266	550
Sophomores	131	145	276
	<hr/>	<hr/>	<hr/>
Totals	415	411	826

Teachers' Courses

	Men	Women	Totals
First year	13	526	539
Second year	3	402	405
Third year	7	42	49
Fourth year	4	25	29
Unclassified	20	66	86
	<hr/>	<hr/>	<hr/>
Totals	47	1061	1108

Total 1934

SECOND SEMESTER

Junior College

	Men	Women	Totals
Freshmen	261	226	487
Sophomores	126	134	260
	<hr/>	<hr/>	<hr/>
Totals	387	360	747

Teachers' Courses

	Men	Women	Totals
First year	23	405	428
Second year	7	410	417
Third year	2	50	52
Fourth year	8	21	29
Unclassified	22	46	68
Totals	62	932	994

Total 1741

WITHDRAWALS

	Men	Women	Totals
First semester	19	82	101
Second semester	9	36	45
Totals	28	118	146

DISQUALIFIED

First Semester

	Men	Women	Totals
Junior College	30	14	44
Teachers' Courses	2	21	23
Totals	32	35	67

CERTIFICATIONS

Junior College

Total	200
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Teachers' Courses

First semester	75
Second semester	286
Total	361

Figures supplied me by the Counselor of Women indicate that 958 women and 379 men live at home. Of this number 1037 come from Los Angeles, 31 from Pasadena, 29 from Alhambra, 19 from Santa Monica, 38 from Glendale, 26 from Long Beach, 15 from Van Nuys, and the others from each of the nearby towns within a radius of thirty miles. One hundred and forty-six women board, 165 keep house and 31 work for board and room. Of the men 47 are boarders, 7 keep house and 7 work for board and room. The ages of students attending during the second semester were as follows:

Age	Students	Per cent
16 years	13	.00746
17 years	157	.09012
18 years	349	.20013
19 years	427	.24513
20 years	291	.16704
21 years	151	.08668
22 years	75	.04305
23 years	52	.02985
24 years	32	.01836
25 years (and over)	195	.11194

The office of Counselor of Women has accomplished much in educational and social guidance this year. An analysis of the statistics of the Southern Branch shows that 10 per cent of the students are seventeen years of age; 20 per cent are eighteen years of age; and 25 per cent are nineteen years of age. This condition makes much personal advising of students mandatory. This is especially true of the women students. The subjects of such conferences are partly covered by the following list: dress, actions, living conditions, scholastic standing, outside work, personal cases, financial help, social relationships, and housing. In reference to housing conditions the Counselor of Women makes the following report:

The office has compiled a list of accommodations for non-resident students. We have inspected the houses. In every case we have advised with householders concerning the conduct of students while in their temporary homes. This has resulted in a minimum number of complaints. In the houses that have a sufficient number of students we have encouraged self-government organizations.

This semester there are 145 houses in which non-resident women students are living and 34 houses in which non-resident men are living—a total of 179 houses. Obviously, under these conditions it is impossible to set a proper standard of living. However, we are justified in feeling proud of the good feeling that exists between students and householders and the University.

The Counselor of Women's office has handled over two hundred applications for work from women students. In connection with loans to students, it has administered in excess of \$1650.00; and has secured five Ebell Scholarships, amounting to \$15.00 for women of the Southern Branch. The "Lost and Found" desk has been organized under this office. During the year enough money has been raised through the efforts of the Counselor of Women to redecorate and furnish the Tower Social Rooms.

The Medical Departments of the Southern Branch have been organized in a more thorough manner this year and have been very effective in helping build up the student body. The following statistics give a summary of the work which has been done:

SUMMARY OF WORK OF THE PHYSICIAN FOR MEN AND ASSISTANTS FOR THE
SCHOOL YEAR 1920-21

Number of students examined	529
Number of students vaccinated	250
Number of vaccinations with good takes	37
Number of men unable to take military training because of physical disability	8
Equipment of dispensary for first aid purposes at a personal expense of.....	\$455.50
First aid rendered in dispensary averaged, per week	20
Average number of men seen in the office for various complaints per week	5
Lecture in hygiene one hour a week throughout the year.	

SUMMARY OF WORK OF THE PHYSICIAN FOR WOMEN AND ASSISTANTS FOR THE
SCHOOL YEAR 1920-21

Number of students examined (not including Training School children)	15
Approved at first examination	238
Approved during year	651
Disapproved, withdrawn, or approval pending	614
Vaccination inspection of all women students and members of faculty.	
Rest room opened in Women's Gymnasium Building.	
Average number of students who daily use rest room	3 to
Emergency room equipped.	
Average number of emergency cases daily	2 to
Consultation with mothers	
Health certificates issued	
Home calls	

Lectures	Hours per week	Number of students
Hygiene	2	350
Home Care of Sick	2	51
First Aid	2	20

Student self-government has had to do the usual pathfinding during the year and in certain respects has not been carried out as we would wish it carried out. The result of the year's work, however, has been successful in that there has come about a clearer definition of the meaning of self-government and of its place in the University. We shall start the coming year with a clearer understanding of the problems of self-government and with a better spirit and temper in our student body.

Our effort this year has been to perfect our organization and to integrate our work.

The Fine Arts and Industrial Arts Departments have been united. Courses in commercial art and interior decorating were this year offered. A rather thorough-going reorganization of courses has been made and standards have been raised.

Three new courses have been offered in biology. Four hundred per cent more students have enrolled for Zoology 1A and 500 per cent more for the course in evolution.

The chemistry laboratory was installed last fall and some 476 students were enrolled in the several courses in chemistry. This department is at present undermanned, a defect which should be corrected next year.

The Department of Classical Languages enrolled a total of 70 students. Its courses in most instances parallel the offering at Berkeley.

The Department of Commerce, with a staff of five instructors, enrolled 36 majors in the Teachers' Courses, 126 majors in Economics and Commerce (Junior College) and 120 Federal Vocational students with a cost of instruction per student hour of 8.4 cents. Its curricula have been revised.

In the Department of Education the most significant improvement of the year was the instituting of the Kindergarten-Primary Course in which

we are now for the first time training teachers for primary work as a whole rather than for fragmentary parts of it. That such a development was needed is evidenced by the fact that the legislature has created a new Kindergarten-Primary Certificate for which graduates of this course will be eligible. Our curriculum has been modified by the experience of the year and in part rewritten. In addition to our regular courses in psychology, a considerable work of mental testing has been carried on. All "problem cases" in the Training School have been tested and some 300 men in the Federal Vocational group have been tested by members of the psychological staff. Individual students from the several departments have been sent to the psychological laboratory for examination and the details of the system of psychological tests for all entering students have been worked out.

The English Department has registered a total of 2248 students in its courses. The field of instruction has been widened to include: (a) advanced courses in composition for sophomores: narrative writing, description and narration, argumentative writing; (b) the following courses in literature: the history of literature, nineteenth century prose, the English novel, Chaucer, Shakespeare.

Geography is one of our largest departments and its work is well done but haste should be made to provide its staff with reinforcements. Because this is an oil-producing region there is a heavy demand for instruction in geology. This demand has in part been met this year but the beginnings of a Department of Geology must be made next year.

The work of our Department of History is well organized and with the addition of one more instructor its staff should be large enough for the coming biennium. Its courses are both numerous and well attended.

The Home Economics Department had an enrollment of 126 students. Its staff is smaller than it should be but it has worked well under adverse conditions. Many calls are made upon it for service which it must refuse. Its power for good is very nearly limitless and it has a very responsible part to play in our scheme of instruction. It is strong now, but it should be made one of the very strongest departments of instruction here. That it may do the work which the State requires of it, a Professor of Home Economics should at once be appointed.

The Department of Mathematics has had to care for larger numbers of students than its staff of three members could handle. Strangely enough, mathematics seems to be our most popular subject. During the first semester the instructors in that department each carried 19.3 hours of instruction. Relief was afforded by the employment of an additional instructor for the second semester.

The Mechanical Arts Department provides instruction for four types of students: teachers, engineers, Training School pupils, and disabled soldiers. The high wages paid in industry since the war have reduced

our enrollment of students of the first group to about 40. Of the Junior College group about 120 are enrolled. Eighteen periods of instruction per week have been given to Training School classes. The major part of the departmental work is rehabilitation, under the general supervision of the Federal Board for Vocational Education. That activity is so important that a more extended account of what has been done is called for.

This work extends into other departments of the school, principally into the Commercial Department, where about one-third of the Federal trainees are given instruction. Perhaps one-ninth are in other departments and the remainder are being trained directly in this department.

Our work with the disabled soldiers started in February, 1919, when the Federal Board for Vocational Education enrolled one trainee with this institution. At present we have a monthly net enrollment of 30 men. The total enrollment for the entire period is about 600 men. These men were at first entered as ordinary students, but it was soon discovered that because of their peculiar requirements they could not receive proper training in the regular classes. They are physically handicapped and vary in previous schooling from fourth grade students to University graduates. The general average is between the seventh and eighth grade of the elementary school.

When we found ourselves confronted with the problem of arranging for special classes, additional instruction, and equipment, the matter of finances was taken up with the Federal Board. It was agreed that the Federal Board should pay all expenses incurred by the University on behalf of their trainees. Under the present contract the school receives \$20 per month for each man. Our voucher for one month was \$6,268.00 and for the fiscal year will amount to approximately \$65,000.00. This money is being expended for special instructors, additional equipment, books and supplies used by the trainees.

The problem of rehabilitation is a large one and calls for much ingenuity. The disabled soldier is sent to us to be trained for a definite occupation. In many cases it is necessary to give him try-out courses under close supervision before we can intelligently decide upon the vocation best for him to choose. The physical condition of the men puts a factor of uncertainty into the work. Some break down and must drop out in spite of our efforts to lighten work so as to meet their strength. Others improve in health so that heavier work can be carried. It developed early in the work that fitting for a vocation was only part of the training needed, for many of these men have come back socially unbalanced. The general atmosphere of the school has in some cases accomplished wonders in helping to solve this problem but often we must resort to indirect methods. However, we are getting encouraging results.

The Southern Branch has reason to feel gratified because of the service it has been able to give in this unusual type of work. Many men

have completed courses and are now in placement training in commercial plants. We are assured by the Federal Board that our enrollment of Federal trainees will be materially increased this coming year which shows that the results of our work are satisfactory. The devoted services of Assistant Professor of Mechanic Arts, Harold W. Mansfield, to the interests and well being of the disabled soldiers whom the Federal Board for Vocational Education has sent to us is deserving of the highest praise.

The organization of our Reserve Officers' Training Corps was begun in January under the able direction of Colonel Guy G. Palmer, and was so efficiently carried out that I am able to report to you that military instruction is now on a firm footing here and is accepted by our students, not as a necessary duty, but rather as one of the distinct privileges of the college.

The Department of Music was heavily handicapped by our failure to find a Professor of Music last year but though its staff was smaller than it should have been, much good work was done.

The Departments of Physical Education for Women and for Men report a distinct improvement in their work over that of last year. As all students must take it, they have a particularly heavy load to carry and must in future be better provided with equipment to carry it.

A good beginning in a Physics Laboratory has been made.

Students have taken so eagerly to the study of political science that a larger staff is needed to instruct them. The same is true of French and Spanish.

The Training School is our largest laboratory. All students in the Teachers' Courses must try out their ability to interpret and use the materials of their other courses there. Of itself it is a large school, for there are 525 children in it. In addition, by special arrangement of the Board of Education of Los Angeles, we are allowed the use of the Grand Avenue and the Thirty-sixth Street schools as supplemental training centers for our cadet teachers. The records show that 856 assignments of student teachers were made last year. No department of our work is so difficult to organize and maintain at a high level of efficiency as this one. The year has witnessed considerable gains both in organization and in standards of accomplishment.

It has been our hope that the Regents of the University would establish here four year college courses for the better training of elementary and junior high school teachers. That hope was in part realized when at their meeting on February 8 they directed us to offer a third year of instruction next year and to announce that a fourth year would be added in 1922-23. Such a programme of studies will enable us to put the training of elementary teachers upon a college basis.

Two years ago the University began the experiment of administering a "branch" nearly 500 miles away from the parent institution and the further experiment of combining instruction in the College of Letters and Science with instruction in a number of teachers' courses. I naturally had doubts as to the outcome of these experiments and perhaps still. We who work day by day with the students here have no doubts whatever as to the success of what has been undertaken. We report to you that in our judgment the University can successfully enlarge itself, if it will, through the organization of departments at some distance from the parent institution, that its spirit is so definite and so powerful as to be transmissible, that our students feel and believe themselves to be a definite part of it, and that in drive and in enthusiasm they form a company as splendid as any I have known.

Respectfully submitted,

ERNEST C. MOORE,

Director.

SUMMER SESSIONS

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to submit herewith my report on the Summer Sessions of the University of California.

Following, as usual, the eastern fluctuations in enrollment, registration in the 1920 Summer Session in Berkeley showed an increase of about 20 per cent: four thousand and nine students were enrolled. Two thousand and forty-four were teachers. Forty-four states were represented and twenty-one foreign countries. One thousand and five were registered in the Intersession and 1427 in the Summer Session in Los Angeles. The total, 6441, is considerably greater than that of any previous year.

If each of these students was registered for six units the total number of units would be 38,646, equivalent to the work of 1207 students registered for 16 units each term for one year. If the cost of college education is \$200 per student per year, the Summer Sessions save the State about \$241,400 annually.

The increase in Los Angeles, 1427 as against 906 in 1919, or about 57 per cent, is particularly gratifying. The Summer Session in Los Angeles thus takes its place as one of the larger summer schools in the United States: of the institutions represented in the Association of Deans and Directors of Summer Sessions, ten are smaller and only eight are larger. There can be no doubt that there is a genuine demand for a Summer Session of the University in Los Angeles, and that the departments selected for representation and the courses offered are admirably fitted to meet that demand. The rapid growth of the institution in size, efficiency, and in reputation is due to the wise and devoted administration of Monroe E. Deutsch, Associate Professor of Latin and Dean of the Summer Session in Los Angeles. His resignation, the result of his desire to give all of his time to teaching and research, is profoundly regretted by all—students, faculty, and administrative officers—who profited by his activities.

In Berkeley the experiment of the Intersession was repeated in 1921. The enrollment of 1597, showing an increase of over 50 per cent, cannot be explained as due to temporary conditions; it is evident that here also the University is meeting a permanent need. Twenty-two states were

represented and eight foreign countries. One thousand four hundred and sixty-eight were registered in upper and lower division courses; 129 in 37 graduate courses, an increase of more than 50 per cent over the 1920 Intersession. Six hundred and eighty registered also in the 1921 Summer Session, thus continuing their work for twelve weeks of the vacation.

With a very few exceptions instructors in the Intersession were members of the University faculty: the students were University students and the courses were those given in our regular sessions, followed in many cases, in the Summer Session, by the courses which ordinarily succeed them. The summer curriculum has thus come to look more and more like that of the fall and spring semesters; the Summer Session to become more and more an organic part of the University. It is hoped that arrangements may be made whereby students can, with the formal approval of the proper authorities, include Summer Session courses as an integral part of their programmes. To this end the hearty coöperation of the Dean of the Graduate Division, the Dean of the College of Letters and Science, the Committee on Courses of Instruction, and the Committee on Admissions has already been secured.

As a final step, an arrangement is greatly to be desired which will permit instructors to substitute a summer's teaching for that of a spring or fall semester. The continuity of courses throughout the twelve weeks could thus be insured without sacrificing the instructor's vacation. A change of our calendar to conform to that of other American universities would make possible the presence during the whole twelve weeks not only of instructors but of desirable students, graduate and undergraduate from other institutions, as well as of teachers from a large number of the schools of California.

Respectfully submitted,

WALTER MORRIS HART,
Dean.

WILMERDING SCHOOL OF INDUSTRIAL ARTS

SAN FRANCISCO, July 1, 1921.

To the President of the University.

SIR: For the Wilmerding School the year 1920-21 has been a period of final readjustment to the new conditions brought upon us by the economic disturbances resulting from the world war. During this year of transition the financial calculations set forth in my report of June 30, 1920, have been realized, so that our budget for 1921-22 can be submitted with practical assurance of a surplus. Likewise the inroads that were made upon our teaching force during and after the war have been repaired, and in all respects the school may be said to have returned to normal.

A number of years ago the public schools of California adopted the plan of half-yearly promotion of pupils. At first the number of pupils beginning in the January term was small as compared with the number beginning in the fall term. Year after year this disparity has gradually been reduced, so that now the mid-year classes have reached respectable proportions. This change will be taken advantage of by the Wilmerding School as a means of simplifying its organization and economizing its teaching force. Hereafter the number of boys admitted in January and in August will be kept equal, and will be limited to seventy at each period. Heretofore we have admitted ninety in August and sixty in January, with the result that the enrollment in some of our upper classes has been unbalanced during one-half of each year.

I have recently put before the Wilmerding School Committee a special report regarding our position with reference to pending changes in the grouping of the grades of the public schools of California, for which provision was made by the State Legislature at its last session. Heretofore there have been the elementary (or grammar) school, comprising grades one to eight inclusive; the secondary (or high) school, comprising grades nine to twelve inclusive; and the university, comprising grades thirteen to sixteen inclusive. In some parts of the State efforts have been made to develop intermediate schools, made up from the upper grammar grades and the lower high school grades. At the same time there has set in the Junior College movement, whereby

some communities have extended their high school organizations to include the thirteenth and fourteenth grades—the present freshman and sophomore years of the University. Thus far no change has been put into effect in the San Francisco schools, from which we get most of our entrants; but it is planned to add a ninth grade to some of the San Francisco grammar schools during the coming year. For the present, and until a more definite and standardized grouping of the grades is worked out in the public schools throughout the state, it will be better for us to continue to admit boys who have completed the eighth grade, regardless of this contemplated change in the San Francisco schools. Whether the present secondary school (grades nine, ten, eleven and twelve) will disappear, and if so which grades will be allotted to the intermediate school and which to the junior college are questions for the future. If the secondary school is to be dissected at all, we shall need to advance the grade of our instruction, even to the status of a junior college, if necessary. Our province cannot be that of an intermediate school, because our endowment requires us to “teach boys trades,” and to do this we must have boys of sufficient maturity. Those of present high school age are as young as we can get results from. It is apparent that all these pending changes are of great concern to us.

During the past year 482 boys have been enrolled concurrently in the Lick and Wilmerding Schools, and 231 girls in the Lick and Lux Schools.

Respectfully submitted,

GEORGE A. MERRILL,

Director.

DEAN OF WOMEN

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to present the following report for the year 1920-1921:

This office has submitted to you from time to time during the year, reports upon the living conditions of the women students and upon the supervision exercised by this office.

The following tables give a summary of the scope of the work:

TABLE I.
LIVING ACCOMMODATIONS OF UNDERGRADUATE WOMEN
AUGUST—DECEMBER, 1920.

At Home	*First year	*Second year	*Third year	*Fourth year	Total	Per cent
Residents Berkeley, Oakland, etc.	381	280	187	152	1000	25.0
Family moved to Berkeley.....	97	92	87	69	345	8.6
With relatives	70	32	22	10	134	3.3
Commuting; S. F., Alameda, etc.	189	99	58	43	389	9.7
Married	27	10	3	10	50	1.2
						47.8
Boarding						
Approved list of University....	300	216	158	116	790	19.6
Not on approved list	**123	111	86	60	380	9.5
Housekeeping	45	36	29	15	125	3.1
Apartments	**15	37	46	62	160	4.0
						36.6
Organizations (Fraternities, Clubs, etc.)	39	148	139	144	470	11.7
Working for board and room	59	45	33	29	166	4.1
	1345	1106	848	710	4009	

* Classification is made according to the year of residence given in the catalogue of Officers and Students; specials are included.

** These places have been approved for freshmen by the office of the Dean of Women after investigation, by personal calls, by telephone or by obtaining letters of approval from parents. The majority of these places are private homes accommodating but one student.

TABLE II.

COMPARISON OF DATA COLLECTED 1915 AND 1920

All Women	1915	1920	Freshmen Women	1915	1920
Living with relatives	54%	48%		57%	57 %
Boarding (not with relatives, clubs or fraternities).....	24%	29%		27%	31 %
Organizations (clubs and fraternities	14%	12%		4%	2.5%
Housekeeping	10%	7%		6%	4 %
Working (board and room)....	—	4%		6%	4 %

Table II is interesting in so far as it indicates that an increasing percentage of students is accommodated in boarding houses while a decreasing percentage lives with relatives and in fraternity and club houses. While the fraternities and clubs have been willing to share the burden of increasing numbers, they have not been able to expand rapidly, and the initiative and leadership necessary to start new clubs and fraternities is not always available when most needed.

Fifty-two per cent of our women are living away from their own homes. Of these 22.5 per cent live in fraternity and club houses and 37.7 per cent live in houses which appear in the approved list of the University. Therefore, 60 per cent of those students away from their own homes may be considered as living under reasonably good conditions. The remaining 40 per cent include students other than freshmen who live as they please, freshmen living under conditions which meet the minimum requirements and have been approved for lack of better housing facilities, and self-supporting students.

The fraternity and club houses, as well as the approved boarding houses, are inspected annually (more often if there is occasion) by Mrs. Mary B. Davidson, Assistant Dean of Women and University Inspector. The inspector rates each house according to a score card prepared by the Committee on Outside Relations, with the advice of the Department of Hygiene. The result of the inspection of last year is worth noting in so far as it draws a comparison between living conditions in fraternity and club houses and in boarding houses.

The average in general housekeeping and sanitation in fraternity and club houses according to the score is eighty-two, the highest score being ninety-one, the lowest sixty-seven. The average in approved boarding houses is seventy-seven, the highest being eighty-nine, the lowest sixty-two.

The average number of residents in the fraternity and club houses is twenty, the largest thirty-two, the least thirteen. In the boarding houses the numbers vary from five to ninety-six.

In fraternities and clubs the average price for room and board is \$42.90 a month. In boarding houses it is \$47.50 a month. Fees additional to charges for room and board, but excluding initiation fees, average \$34.16 annually and vary from \$10 to \$58.50 for the fraternity or club woman. But even with this addition the report shows that it costs a woman an average of \$7.00 less yearly to live in a fraternity or club than it does to live in a boarding house.

In reports of previous years attention has been called to the embarrassing fact that of the students who are living away from their own homes, those who live in fraternity and club houses secure the best available conditions for student life. The foregoing comparison serves to emphasize this fact.

This office, faced with an undergraduate student body of approximately 4000 women, must be constantly on the alert for points of contact with individuals and with groups. Contacts through activities and student organizations are often pointed out as legitimate and far-reaching. But it is easy to be deceived as to the importance of any one means of approach to students. Therefore, a study has been made during the year of so-called student activities open to women and participation in them.

There are ninety-two committees and clubs, not including the twenty-eight womens house clubs and fraternities, in which women participate. In forty of these both men and women participate. These activities cover

Student Self-Government	15
Student Publications	4
Musical, Dramatic and Artistic Efforts.....	5
Departmental Clubs	10
Honor Societies (Academic-18, Student-7).....	25
Athletics	10
Social Clubs	10
Religious Clubs	9
Miscellaneous Clubs	4

Participation is by general election or by appointment as in student self-government offices and committees; by election as in honor societies; by try-out as in musical, dramatic and artistic activities; while participation is open or automatic in departmental, social and religious clubs.

This formidable list would seem at first sight to offer opportunity for congenial self-expression for each woman at the University, and to offer points of contact for this office which would reach almost all the women students. The following table presents the facts:

TABLE III.

PARTICIPATION OF WOMEN IN STUDENT ACTIVITIES*
JANUARY—MAY, 1921

Number undergraduate women in colleges at Berkeley.....	3973
Number participating in activities	1019
Number conspicuous in activities	89
Number of women belonging to houses**.....	800
Number in activities belonging to houses**.....	517
Per cent of women in activities	28 $\frac{1}{5}$ %
Per cent conspicuous in activities	2 $\frac{1}{4}$ %
Per cent of those in activities belonging to houses.....	50 $\frac{1}{2}$ %
Per cent of those conspicuous in activities belonging to houses....	73 $\frac{1}{5}$ %
Per cent of house members in activities	64 $\frac{3}{5}$ %

This table will please those who believe that student activities are of little value, and it will disappoint those who consider them a valuable feature in college life. It reveals the inadequacy of the activity approach for this office, and it brings out from another angle the difference which membership or non-membership in a fraternity or club makes in the life of a student. In fact, it shows that if this office were forced to confine its approach to students to the avenue offered by student activities it would be reaching the students who need the contact least and who already have the greatest advantages. It shows, too, together with the report on living conditions, that the fraternities and clubs tend to become a residential college within the University with all the college life implied thereby.

Fraternal organizations at the University of California have developed the best living conditions and widest contacts now available. But they are available only for a small group. Better living conditions and wider contacts are needed for all students. It remains for the University itself to make such advantages generally available by establishing dormitories.

Several other means of contact with students are open to this office. No one of them is universal. In fact, only the academic contact can be universal. But each has its value for a special group. Other than the academic contact and the contact through activities, the three most important are as follows:

* The material for these figures was taken from the point system cards, from the athletic records, the Parthenon program, and the Senior Advisor cards, and from other data in the Dean of Women's office. Membership in an organization is not counted as an activity, except when membership entails specific duties as in the musical clubs, in athletics, and in the Parthenon.

** Sororities and Clubs.

1. The relationship of this office with student government, a relationship of non-interference but cordial coöperation, which brings the student leaders closely in touch with the staff:

2. The senior advisors, who, as the interpreters between this office and the freshmen women, make every effort to establish friendly and useful bonds of common interest:

3. The employment bureau for self-supporting students which gives this office an insight into the lives of a most earnest group of young women, and which serves them by helping them to keep the difficult balance between health, scholarship and self-support.

By these different means and many other personal and individual contacts this office seeks to perform its function of assisting the president of the University and the faculties of the academic colleges in matters pertaining to the general and personal interests of the women students of the University.

Respectfully submitted,

LUCY WARD STEBBINS,

Dean of Women.

CALIFORNIA MUSEUM OF VERTEBRATE ZOOLOGY*

BERKELEY, July 1, 1921.

To the President of the University.

SIR: I have the honor to present the following report upon the work of the California Museum of Vertebrate Zoology for the year 1920-1921.

During the year just passed there have been 168 new accessions of scientific material. A total of 2630 separate specimens were involved. A notable single accession consisted of a collection of birds numbering 231 study-skins, the gift of Messrs. Carl S. Mueller and Julius A. Mueller of Marysville, California. These included nineteen species new to the Museum. Another gift of unusual value was that of Mr. R. H. Heggen of Oakland, consisting of 110 birds from Australia representing seventy species new to the Museum. Mr. Donald R. Dickey of Pasadena presented to the Museum topotypes of three rare southern California mammals heretofore lacking in our series. In fact, one of the species had never been represented here in any way. An extensive collection of the reptiles and amphibians of Louisiana was presented by Mr. G. W. Goldsmith.

The total number of catalogued specimens now contained in the Museum is 83,980, distributed among the four departments as follows: mammals, 32,187; birds, 41,838; reptiles and amphibians, 8110; sets of birds' eggs and nests, 1845.

New loans involving 314 separate specimens were made during the year to twenty-six different institutions or individuals. There are now outstanding thirty-five loans, involving 2773 specimens. The more noteworthy of these outstanding loans are: practically all of our shrews (genus *Sorex*) to Dr. Hartley H. T. Jackson of the United States Biological Survey; the chipmunks (genus *Eutamias*) to Mr. Arthur H. Howell of the same institution; the Bewick wrens (genus *Thryomanes*) to Dr. Harry C. Oberholser, also of the Biological Survey; and the snakes of the genera *Coluber* and *Diadophis* to Mr. A. I. Ortenburger of the Museum of Zoology, University of Michigan. Extensive use of our materials continues to be made by local students outside of the staff of the Museum itself, notably at the California Academy of Sciences and in the Departments of Paleontology and Zoology, University of California.

* A list of gifts presented to the Museum of Vertebrate Zoology will be found on pages 217-220.

The field work during the year consisted in part of a number of trips made within the state by Mr. Joseph Dixon, Economic Mammalogist, having to do with his investigations upon the fur-bearing mammal problem. The muskrats and beavers in Imperial Valley were given special attention. There, through reclamation, an entirely new, aquatic fauna has replaced the original desert fauna as a result of the very recent human occupancy of the region. Mr. Richard Hunt, Assistant Curator of Birds, did general collecting during May and June, 1921, in Alpine County, California. On May 20, 1921, Mr. Harry S. Swarth, Curator of Birds, with Mr. William D. Strong as assistant, left Berkeley for five months of field work in the Skeena River district of British Columbia. The plan of this work, made possible by special gift of Miss Annie M. Alexander, is in continuation of the programme begun at the time when the Museum was founded, comprising a thorough study of the faunal constitution and relationships of the northwest coast region of North America. The Director of the Museum, Professor Joseph Grinnell, spent the months of April and May in making a tour of museums and other educational institutions in the eastern United States. Museum methods were looked into; study was made of vertebrate specimens bearing upon western problems; special literature was consulted in the Philadelphia Academy, the Library of Congress, and elsewhere; and the annual meetings of the American Society of Mammalogists in Washington, May 2 to 4, and of the American Association of Museums in Cleveland, May 23 to 26, were attended.

Dr. Harold C. Bryant, Economic Ornithologist on the staff of the Museum, has continued his programme of popular education through the medium of illustrated lectures, newspaper articles, and exhibits. The nature guide service in the Yosemite Valley has proved so successful as to demand continuance in 1921. In 1920 over twenty-six thousand persons were reached through campfire talks and supervised excursions. Dr. Bryant has also conducted regular University Extension classes throughout the winter in the Bay cities.

Mr. Tracy I. Storer, Field Naturalist, has continued compilation of the results of the Yosemite Natural History Survey. Mr. Swarth has completed his report upon the vertebrate fauna of the Stikine River region, British Columbia. Professor Grinnell has passed to publication his revision of the kangaroo rats of California. Much time has been devoted by several of the staff to systematic overhauling of the collections, so as to bring them down to date as regards both arrangement and nomenclature. Also, as part of the regular routine, many requests for the determination of specimens have been met.

Respectfully submitted,

J. GRINNELL,

Director.

GIFTS TO THE UNIVERSITY

JULY 1, 1920, TO JUNE 30, 1921

GENERAL LIST

- Miss Annie M. Alexander, Suisun, California, approximately \$11,000 during the year 1919-20 toward the budget of the Museum of Vertebrate Zoology; \$600 to the Museum of Vertebrate Zoology for the expenses of a representative on an expedition to Eastern Oregon; \$8100 per year, for five years, in support of the research activities of the Department of Paleontology, to be expended under the direction of Professor B. L. Clark, Director of the Museum of Paleontology.
- Alumnus of Class of 1886, \$2500 toward the Research Fund of the University for the year 1920-21.
- An Alumnus, \$1000 to the University Library, for the purchase of books in the upbuilding of the Library of Mediaeval History.
- An Alumnus of the Class of 1898, \$2400 to provide certain technical assistance needed for the completion of a monograph on human intestinal protozoa and in connection with work on the flagellate parasites of the termites or white ants.
- An Alumna of the Class of 1908, who was the recipient for four years of a scholarship, \$500 for the establishment of the "Boomerang Scholarship Fund" for the benefit of men and women undergraduate students.
- An Alumnus, 30,000 francs for the purchase at Paris of the Bruel Collection, consisting of about 5000 volumes and 600 pamphlets on mediaeval history.
- An Alumnus, \$1000 in support of the Santiago, Chile, Station of the Lick Observatory.
- Allis-Chalmers Manufacturing Company of Milwaukee, Wisconsin, through Mr. M. M. White, Manager and Chief Engineer of the Hydraulic Department of that company, a bronze hydraulic turbine runner, valued at approximately \$250, which is of value in the instruction in hydraulics and hydraulic machinery.
- American Academy of Arts and Sciences, Boston, \$360 for the purpose of special lenses for use with the Crossley reflecting telescope, for the Santiago, Chile, Station of the Lick Observatory.
- American Medical Association, \$450 for the conduct of certain researches on the relation of the endocrine organs to ovulation in the mammalia.
- American Red Cross Shop of Berkeley, \$1350 for two scholarships of \$675 each to students in the Department of Economics.
- American Red Cross, Washington, D. C., \$3000 for the support of certain researches upon the relation of fertility and nutrition to be conducted by Dr. H. M. Evans, Professor of Anatomy.

American Red Cross, Berkeley Chapter, \$400 for the purchase of necessary equipment for the Department of Hygiene for the teaching of vocational students in the Department of Public Health Nursing.

Anonymous donor, \$10,000 for the establishment of a fund to be known as the "Hattie Heller Graduate Scholarship Fund," the income of the fund to be used annually for scholarships for graduate students in any branch of the University.

Anonymous donor, \$50, to be deposited with the Union Trust Company of San Francisco to accumulate until the year 2257 A.D., the income of which after the year 2257 is to be used for the maintenance of the University.

Associated Radiograph Laboratories, \$1200 for the academic year 1920-21, for research in radiography in the Department of Dentistry.

Associated Students of the University Farm, \$250 for the purpose of increasing the instruction in physical education, particularly the work in football.

Associated Students of University of California, \$600, being the contribution of the Torch and Shield Society and of the Associated Students of the University of California towards the ambulance fund created for the purchase of an Infirmary ambulance.

Bell, George L., of the class of 1909, \$20 toward the LeConte Memorial Fellowship for the year 1920-21.

Bohemian Club, a three volume set of Bohemian Grove plays, presented to the University in memory of Henry Morse Stephens.

Bowles, Regent P. E., \$125 toward the support of the LeConte Memorial Fellowship for the year 1920-21.

Bradley, F. W., \$1000 in support of the Santiago, Chile, Station of the Lick Observatory.

Bridge, Dr. Norman, \$1000 as a research fund for Professor Robert O. Moody in the Department of Anatomy.

Brookman, Douglas, of the class of 1910, \$20 toward the support of the LeConte Memorial Fellowship for the year 1920-21.

Bunting Iron Works, of San Francisco, to the Department of Mechanical and Electrical Engineering, a three-inch rotary pump called the MacFarland Wizard Pump, valued at about \$250.

Byron Jackson Iron Works, Berkeley, to the Department of Mechanical and Electrical Engineering, one 14-inch Byron Jackson Deep Well Turbine Pump with electric motor, valued at approximately \$950.

California Central Creameries, through the president of the corporation, Mr. C. E. Gray, to the Anatomical Laboratory, certain products to be used for research work in nutrition and ovulation being carried on by the Department of Anatomy. The value of these food products total almost \$500.

California State Dental Association, \$200 for research in dentistry in the Department of Dentistry of the University.

California State Tuberculosis Association, \$500 as an addition to the fund for the investigation of the effect of chaulmoogra oil derivatives on tuberculosis.

California Tuberculosis Association, \$1500 as a donation to the Hooper Foundation for Medical Research for the salary of a chemist during the year 1921.

- Canners' League of California, \$1250 as an addition to their regular remittances for the support of the botulism investigation being conducted by the George Williams Hooper Foundation for Medical Research.
- Cebrian, Juan C., of San Francisco, more than 1000 volumes of Spanish works, printed from 1530 to 1920, embracing nearly all branches of knowledge.
- Class of 1920, \$2000 for the erection of a memorial bench on the campus for those Californians who died in service.
- Christiansen, Miss Carrie J., of Napa, thirty-nine volumes from the library of the late Ambrose Bierce.
- Coleman Heirs, John C. and Edward, \$100,000 in bonds, to be held by the Regents in trust perpetually and the income used for research in the Medical School in relation to an investigation in connection with deafness.
- College of Dentistry Students, \$1065.92 for the erection of a students' lunchroom and clubhouse.
- Congregation Emanu-El, \$100, being their annual contribution for the support of the American School of Oriental Research in Jerusalem.
- Coope, Mrs. Bertha, of San Francisco, a collection of shells from the South Seas made by her father, and a small amount of conchological works, largely in French, dealing with the shells, for the Department of Zoology.
- Creed, W. E., of San Francisco, \$125 toward the support of the LeConte Fellowship for the year 1920-21; \$400 to be expended under the direction of Professor Samuel J. Hume to bring to the University four art exhibitions.
- Crocker, Wm. H., \$1200 to be expended in connection with an expedition from Lick Observatory to observe the total solar eclipse in Australia in 1922; \$2000 for work in the Department of Pediatrics under the direction of Dr. W. P. Lucas; \$1200 to be applied to the administrative and scientific requirements of the Lick Observatory.
- Davis, Mrs. Emma S., deceased, through Miss Mildred Averill, \$2000 for the establishment of the Mrs. Emma S. Davis C. S. B. Scholarship for Women."
- Davis, J. J., of Templeton, to the Museum of Paleontology, a slab of rock containing fossil seal remains occurring in Miocene strata near Templeton.
- Durant Lodge No. 268, Free and Accepted Masons, Berkeley, \$300 for the establishment of two "Durant Lodge Scholarships" in the sum of \$150 each in memory of Henry Durant, the first President of the University of California, and in whose memory the Durant Lodge was named.
- E. I. DuPont De Nemours & Company, \$750 for the DuPont Fellowship in Chemistry for the year 1920-21; \$750 for the expenses of a research on the use of dyes in medicine to be made by the Department of Anatomy under the direction of Dr. H. M. Evans.
- Dyer, Mrs. G. S., of Cleveland, Ohio, a group of aboriginal Australian war weapons consisting of shields, bolos, boomerangs, etc.
- English Class 114, \$24.25 for the purchase of books in the Library.

- English Class 121, \$31.50 for the purchase of additional books for the reserve shelf in the Library.
- Ervian Club of the University of California Armenian Associated Students, a number of volumes of books pertaining to the life, literature, art and history of Armenia, valued at \$150.
- Foster, Miss Edythe, of San Rafael, \$150 per year for the establishment of a scholarship in memory of Marjorie Green Foster, formerly a Teaching Fellow in the Hooper Foundation, to be awarded to a student in the Department of Research Medicine.
- Fowler, Mrs. Margaret B., \$1000 to provide certain technical assistance needed for the completion of a monograph on human intestinal protozoa and in connection with work on the flagellate parasites of the termites or white ants.
- Fletcher, John D., of the class of 1907, \$20 toward the support of the LeConte Memorial Fellowship for the year 1920-21; \$500 for the establishment of the Morse Stephens Scholarship for the academic year 1921-22.
- Friend of the University, \$50 as a prize for the best essay on the "Ideals and Attractions of Good Citizenship," the prize to be known as the "Civics Prize."
- Gray, Prentiss N., of the class of 1906, \$20 toward the support of the LeConte Memorial Fellowship.
- Griffiths, Farnham P., of the class of 1906, \$20 toward the support of the LeConte Memorial Fellowship.
- Grinnell, Dr. J., Director of the Museum of Vertebrate Zoology, the sum of \$75 to the Museum. This sum is one-half of the honorarium received by Dr. Grinnell for giving a series of lectures in Yosemite Valley under the auspices of the University Extension Division.
- Hailman, Mrs. W. W., of Pasadena, of the library of her husband, to be placed intact in the Library of the Southern Branch of the University, and to be known as the Hailman Memorial Library.
- Hanna, Most Rev. Archbishop Edw. J., of San Francisco, a set of the Catholic Encyclopedia and a copy of the Codex Iuris Canonici, to be added to the Library of European Sources.
- Harris, Harry, of Kansas City, Mo., to the Museum of Vertebrate Zoology, an original plate from Audubon's elephant folio atlas of the Birds of America, depicting three species of birds from California which came to Audubon's knowledge through Mr. Thomas Nuttall.
- Harrison Steam Boiler Works Cochrane Corporation, of Philadelphia, Pa., through its Pacific Coast representatives, Charles C. Moore & Company, San Francisco, a Cochrane master clock recorder, complete, valued at approximately \$500, which has been added to the equipment in the hydraulic engineering laboratory.
- Hearst, Mrs. Phoebe A., deceased, \$2400, being the annual amount received for a scholarship fund for women.
- Helsingfors Universitets Botaniska Institution, at Helsingfors, Finland, a series of Finland plants, carefully prepared and with printed labels and placed in covers in book form.
- Hendricks, Scott, of the class of 1904, \$20 toward the support of the LeConte Memorial Fellowship for the year 1920-21.

- Hering, Mr. W. E., of San Francisco, \$150 for the support of a scholarship for a student in Homeopathics instruction, to be known as the Constantine Hering Scholarship in Homeopathy.
- Herzog Electric and Engineering Company, San Francisco, to the Mechanical Engineering Department an eight-inch centrifugal pump, at a value of approximately \$500.
- Hokkaido Government, Japan, to the Department of Botany, of the first three fascicles of "The Icones of the Essential Forest Trees of Hokkaido," an extremely valuable illustrated work issued by the Hokkaido Government.
- Huntley, Mrs. D. B., of Oakland, to the library of the College of Mining of the technical library of Mr. Huntley, consisting of 124 books dealing with mining and metallurgy.
- Ijima, Professor I., of the University of Tokyo, fifty Japanese birds to the California Museum of Vertebrate Zoology.
- Jepson, Dr. W. L., Professor of Botany, \$500 for the support of an additional assistant in botany for the period September 1, 1920, to July 1, 1921.
- Kennedy, Lawrence J., of the class of 1906, \$20 toward the support of the LeConte Memorial Fellowship for the year 1920-21.
- Keuffel and Esser Company of Hoboken, N. J., through their agents, the Grimes Strassforth Stationery Company of Los Angeles, an eight foot demonstration slide for the Southern Branch of the University.
- Kew, Dr. William S., of the United States Geological Survey, an interesting collection of shells for the Department of Paleontology.
- Kinney, Ralph W., of San Francisco, \$500 for the "Ralph W. Kinney Scholarship in Agriculture"; a stone base and pedestal for the bust of Abraham Lincoln by Gutzon Borglum which has been placed near the Sather Tower, valued at approximately \$650.
- Kofoed Research Fund, \$115 by various physicians to enable Professor Kofoed to continue during the year his work on intestinal protozoa.
- Law, Eugene J., a complete set of the Century Dictionary for the Museum of Vertebrate Zoology.
- Legge, Dr. R. T., \$20.50 for Infirmary funds. This amount was paid to Dr. Legge from the State Compensation Insurance Fund for professional services rendered employees of the University.
- Lewis Foundation Corporation of Atascadero, California, through its president, Mr. E. G. Lewis, a large part of the skull and numerous vertebra of a cetacean, occurring in rock of miocene age, excavated in the laying of the foundation of the Atascadero High School.
- Lillard, Mrs. J. B., of the State Board of Education, valuable poultry for the University Farm School, Davis.
- Lyding, Mr., Poultry Advisor, Sacramento Suburban Fruit Lands Company, a Silver Spangled Hamburg male for the Poultry Division of the University Farm School at Davis.
- Lyon Electrical Company, a Mansur-Lyon electrical brooder with a capacity of 500 chicks.
- Majors, Dr. E. A., a graduate of the Medical School, for the use of the University Hospital, Arsphenamine (Salverson) and Neoarsphenamine (Neosalvarsan) to the amount of \$150 to \$200.

- Medical School Faculty and Alumni, \$400 for the maintenance of the William Watt Kerr Scholarship for the year 1921-22.
- Ferritt, Ralph P., of the class of 1907, \$20 toward the support of the LeConte Memorial Fellowship for the year 1920-21.
- Miller, L. H., Assistant Professor of Biology in the Southern Branch, to the Library of the Southern Branch, two interesting documents bearing on the history of American slavery.
- Hills, Ogden, \$1000 in support of the Santiago, Chile, Station of the Lick Observatory.
- Fueller, Carl S. and Julius J., of Marysville, California, a collection of 231 specimens of birds to the Museum of Vertebrate Zoology.
- Museum of History, Science and Art, Los Angeles, to the Department of Paleontology, a complete plaster reproduction of the skull and skeletal structures of the ground sloth *Nothrotherium* from the Pleistocene asphalt deposits of Rancho La Brea.
- Napa Seminary Club, \$100 as an addition to the Napa Seminary Loan Fund.
- National Canners' Association, \$1250 as a special contribution to the botulism investigation fund.
- National Canners' Association, Washington, D.C., \$1800 for botulism research work, which they agreed to support for a period of two years.
- National Dental Association, \$500 for the support of certain researches on root canal sterilization to be conducted by Dr. John A. Marshall, Associate Professor of Biochemistry and Dental Pathology.
- Native Sons of the Golden West, \$2250 for the support of three scholarships in the sum of \$750 each, which bear the name "Native Sons of the Golden West Fellowships in Pacific Coast History."
- National Tuberculosis Association, \$600 toward the fund for the research work on chaulmoogra oil.
- Newton, P. S., Secretary of the California Optical Company, Berkeley, \$28 to be added to the Infirmary funds, which sum represents the amount due for services rendered in the eye clinic at the Infirmary during the enrollment of students in January.
- Connor, Richard, of the class of 1905, \$20 toward the support of the LeConte Memorial Fellowship for the year 1920-21.
- etaluma Poultrymen, \$1000 in support of certain investigations in poultry pathology.
- Pioneer Incubator Company, Los Angeles, a Pioneer blue flame coal oil brooder stove for the Poultry Division of the University Farm School, Davis.
- Pytanean Society of the University, \$125 for the purchase of apparatus for the operating room of the Infirmary.
- Raymond, Mrs. Charles B., of San Francisco, \$1000 to the George Williams Hooper Foundation for Medical Research, to be used in investigations in connection with human tuberculosis.
- Rochester University, New York, \$2500 for the conduct in the George Williams Hooper Foundation for Medical Research of studies on the relation of blood volume and hemoglobin fluctuations to altitude.
- Robison, Dr. C. H., Instructor in Geography in the Southern Branch of the University, to the Biological Department of the Southern Branch of a collection of some 200 microscope slides upon various biological subjects.

- San Francisco Society for Dental Research, \$1200 per annum, for Fellowship in Dental Research at the George Williams Hooper Foundation.
- Sartori, Regent Mrs. Joseph F., \$300 toward the support of a University Extension course for social workers.
- Schafer, Fred, of Oakland, to the Department of Drawing and Art, of box of casts suitable for use in classroom work.
- Scripps, E. W., \$4000 to the Scripps Institution for Biological Research to be held as a special fund applicable to the payment of certain salaries.
- Sohier, Wm. D., of Boston, Mass., an important botanical work entitled "Plantae Asiaticae Rariores."
- Spreckels, A. B., \$1500 in support of the Santiago, Chile, Station of the Lick Observatory.
- Stewart, Mr. and Mrs. D. M., of Berkeley, \$200 for the establishment of the "Erma Stewart Scholarship," to be awarded to an undergraduate woman student in chemistry or mathematics.
- Swasey, Dr. Ambrose, \$1000 in support of the Santiago, Chile, Station of the Lick Observatory.
- Swedish-American Patriotic League of California, \$225 in support of the scholarship for the year 1920-21.
- Talbot Estate, Frederick C., \$10,000 for the University of California.
- Trask, Parker, a graduate student in the Department of Paleontology, slab containing an excellent specimen of an Eocene, Green River, fish for the Paleontological Museum.
- Twenty-One Mining Company, San Francisco, a number of exceptionally interesting and helpful mine models which have been of value for exhibit and demonstration purposes.
- University of Virginia, one of the 150 medals struck in commemoration of that University's 100th anniversary celebrated May 31 to June 1, 1921.
- Van Liew, C. C., of San Anselmo, his professional library for the use of the Department of Education.
- Wachs Realty Company of Oakland, \$500 for the establishment of two scholarships for the academic year 1921-22, to be known as the Aaron N. Wachs and Annie N. Wachs Scholarships, to be awarded to undergraduate students from Alameda County, California.
- Walker, Joseph, Jr., of Templeton, California, to the Museum of Paleontology, a fossil whale head and vertebra collected in Miocene strata near Templeton.
- Warbasse, Mrs. Herbert N. \$50 as a contribution to Professor Kofoid's research fund, in recognition of the invaluable assistance he is rendering to the community and of the benefit which she has personally received.
- Ward, Dr. James W., to the Hahnemann Hospital, five sets of silverware for use in private rooms with an estimated value of \$300.
- Williams, Mrs. Dora F., of San Francisco, \$100 for the purchase of books for the Department of Music.
- Williams, Mrs. Evan, of Berkeley, \$250 for the support of the Enid Williams Memorial Scholarship in Music for the academic year 1920-21.
- Witter, Dean H., of the class of 1909, \$20 toward the support of the LeConte Memorial Fellowship Fund.

HERBARIUM*

- Allen, James L., Brawley, 1 sheet of *Alhagi camelorum* from the Imperial Valley.
- Arnhart, P. A., San Diego, 5 sheets of *Zostera*.
- Bioletti, Miss Dorothy, Walnut Creek, 1 specimen *Hydnum erinaceum* from Pine Cañon slope of Mt. Diablo.
- Baldwell, Mrs. Clara B., Edgewood, Rhode Island, 233 sheets of Marine Algae collected on the New England coast.
- Bemens, Mrs. J., Greenville, 6 sheets of phaenogams collected at Crescent Mills and Greenville.
- Carnegie Institution of Washington, through Dr. H. M. Hall, 270 sheets of phaenogams, including sets for distribution of *Atripex pusillus* and *Chrysothamnus albidus* from their type localities; 49 photographs of type specimens in the Gray Herbarium, and 19 photographs of type specimens in the Greene Herbarium, and 155 prints of these to be used in exchange; also through I. M. Johnston, '21, 507 sheets of phaenogams collected in Colorado.
- Conchie, C. W., San Francisco, 18 sheets of *Zostera pacifica*, some collected at Belvedere.
- Eastwood, Miss Alice, California Academy of Sciences, San Francisco, 2 sheets of Algae ("Fungee and Wengee," 2 "Mockyee") sent from Chinatown.
- Ellers, Miss Anna E., Berkeley, 3 sheets of *Berberis pinnata* from Oakland Hills.
- Farquhar, Mrs. James, Gilroy, 335 sheets of phaenogams and 50 cryptogams from the herbarium of Lola D. Ellis, collected in Illinois and Massachusetts by Miss Ellis and A. B. Seymour.
- Fordner, Professor N. L., University of California, Berkeley, 119 sheets of Marine Algae.
- Gaiser, Mr. H. I., Grass Valley, Nevada County, 1 sheet of *Erythraea Muhlenbergii*.
- Gray Herbarium, Harvard University, Cambridge, Mass., 4 sheets of *Nicotiana*, through Professor W. A. Setchell.
- Hager, E. C., Riverside, 1 sheet of *Oxytheca emarginata*, 2 sheets of desert plants.
- Johnston, Ethelbert, State Agricultural Department, Sacramento, 1 sheet of *Linaria cirrosa* from Auburn.
- Kandach, F. C., Stockton, Department of Public Works, 1 sheet of *Abutilon Theophrasti*.
- Korgan, W. C., Chico, 1 sheet of *Tribulus terrestris*.
- Knox, George L., Los Angeles, 4 sheets of *Ipomoea palmata* cultivated at Los Angeles.
- Kunz, P. A. & R. D., Harwood, Pomona College, Claremont, 7 sheets of southern California plants.

* Total number of specimens received by gift from July 1, 1920, to June 30, 1921, for the Herbarium, 3654.

- New York Botanical Garden, Bronx Park, New York, 360 sheets of *Alga* Ostenfeld, Prof. C. H., Botanisk Museum, Copenhagen, 1 sheet of *Haloph* *ovata*.
- Parish, S. B., University of California, 115 sheets of phaenogams from southern California.
- Reed, F. M., Riverside, 1 sheet *Eriogonum paroifolia* from Orange County.
- Saunders, C. F., Pasadena, 1 sheet of *Phytolacca divica*, collected at Los Angeles.
- Setchell, Professor W. A., University of California, 247 sheets of *Nicotiana* including 6 sets especially prepared for distribution to various botanical institutions; also 2 sheets of *Arceuthobium Arizonae* collected at the Grand Cañon.
- Sumner, R. W., San Diego, 4 sheets of Cryptogams from southern California.
- Swarth, Dr. H. S., University of California, 18 sheets of phaenogams from Alaska and British Columbia.
- Tracy, J. P., Eureka, 58 sheets of phaenogams from northwestern California, including 34 to be mounted for herbarium use and 24 to be distributed as duplicates to other botanical institutions; all fully determined and with complete data; 187 sheets including 134 for herbarium use and 53 to be distributed for exchange.
- U. S. War Department, Bureau of Science, Manila, P. I., through Dr. E. Merrill, 775 sheets of phaenogams collected on the Philippines; also sheets of Cryptogams.
- Walker, Miss Harriet A., University of California, 8 sheets of conifers from Golden Gate Park.

BOTANICAL MUSEUM*

- Carnegie Institution of Washington, through Dr. H. M. Hall, 3 specimens *Podaxon Farlowii* from Yuma, Arizona; also 2 specimens floribundum from Colorado.
- Jordan, Dr. David Starr, Stanford University, 6 specimens of fossil fish from Lompoc, Cal.
- Metcalf, Professor W., University of California, 1 cone *Abies lasiocarpa* from American Creek, Kootney National Forest.
- Nicholson, Gordon, Ontario, 8 specimens of fungi from the San Bernardino Mountains.
- Parks, Harold E., San Jose, 317 Cryptogams.
- Setchell, Professor W. A., University of California, 3 sheets of Conifers from the Grand Cañon.
- U. S. Rubber Co., through Dr. H. M. Hall, 3 samples of *Hevia brasiliensis*.

* Total number of specimens received by gift from July 1, 1920, to June 30, 1921, for the Botanical Museum, 343.

BOTANICAL GARDEN*

- Carnegie Institution of Washington, through Dr. H. M. Hall, 6 packets of seeds of rubber plants from Nevada and Arizona.
- Gobish, H. E., Oroville, 1 packet of seed of *Momordica*.
- Gilmore, Melvin R., State Historical Society, North Dakota, 4 packets of seeds of *Nicotiana*.
- Honing, J., Medan, Sumatra, 3 packets of tobacco seeds.
- Kennedy, Dr. P. B., University of California, 1 packet of rubber seed.
- Norwagei, H. J., Raucagua, Chile, 3 packets of seeds from Valparaiso.
- Reed, H. B., Bard, 2 packets of rubber seeds from California.
- Saunders, Charles Francis, Pasadena, 2 packets of seeds.
- Skotsberg, Dr. Carl, Göteborg, Sweden, 84 packets of seeds from Sweden.

CALIFORNIA MUSEUM OF VERTEBRATE ZOOLOGY

NOTE.—This list does not include specimens secured by collectors normally employed from the endowment fund or from other funds provided by Miss Annie M. Alexander for the maintenance of the Museum, nor does it include accessions received by purchase out of the same fund.

The term "mammal" as here used ordinarily means a dry study-skin plus the cleaned skull belonging to the same individual; not infrequently a complete skeleton involved, and sometimes the entire animal preserved in alcohol. A "bird" is usually a dry study-skin, sometimes a partial or complete skeleton. A "set of eggs" is the total number of eggs found in a bird's nest, often accompanied by the nest itself. A "reptile" or "amphibian" is the entire animal preserved in alcohol.

Localities are in California unless otherwise specified.

- Alexander, Miss Annie M., 1 skull of black bear (*Ursus americanus*), from Vancouver Island, British Columbia.
- Wylsworth, Miss Bertha, 1 California quail (*Lophortyx c. californicus*), from Berkeley.
- Wiley, Vernon, fragment of skull of mountain sheep (*Ovis californianus*) from Tule Lake, Modoc County.
- Wheeler, Capt. W. C., 6 foreign birds.
- Wingsinger, A. J., 2 partial albino Brewer blackbirds (*Euphagus c. mini-sculus*), from Tracy, San Joaquin County.
- Wassett, F. N., 1 wing of ancient murrelet (*Synthliboramphus antiquus*), from Moss Beach, San Mateo County; 2 amphibians (*Rana a. draytoni*, *Batrachoseps attenuatus*) from northern Monterey County.
- Wioletti, Prof. F. T., 1 skunk (*Mephitis o. occidentalis*), from Tunnel Road, Contra Costa County.
- Woolf, J. H., 1 Savannah sparrow (*Passerculus s. brooksi*), from Tacoma, Washington.
- Wittan, H. N., 1 skull, with curiously malformed antlers, of black-tail deer (*Odocoileus columbianus*), from near Stony Ford, Colusa County.
- Wyant, Dr. H. C., 1 northern varied thrush (*Ixoreus naevius meruloides*), from Berkeley; 1 nest of Sierra hermit thrush (*Hylocichla g. sequoiensis*), from Yosemite Valley.

* Total number of packets of seeds received by gift from July 1, 1920, to June 1921, for the Botanical Garden, 106.

- Buker's Bird Store, San Francisco, 4 foreign birds.
- California Fish and Game Commission, horns of deer, said to be a female, from near Coalinga, Fresno County.
- Camp, Dr. C. L., 1 mammal, 6 reptiles (including a rattlesnake, *Crotalus horridus*), and 64 amphibians, from New York State.
- Cheney, E. S., 3 bats (*Nyctinomus mexicanus*) from Petaluma, Sonoma County.
- Chickering, Allen L., 2 Peruvian teal (*Querquedula puna*) collected by Lt. William Percy near Cerro de Pasco Mine, Lake Junin, Peru.
- Clyde, Norman, 2 snowshoe rabbits (*Lepus w. klamathensis*), 1 skull of bear (*Ursus americanus*), from near McCloud, Siskiyou County.
- Colburn, Albert E., 1 male European widgeon (*Mareca penelope*) from Guadalupe, Santa Barbara County.
- Collins, J. L., 1 kangaroo rat (*Dipodomys h. californicus*) from near Calistoga, Marin County.
- Dickey, D. R., 11 pocket mice, including topotypes of *Perognathus c. femoralis*, *P. p. bangsi*, and *P. alticola* (the latter a species new to the Museum collection) from Dulzura, San Diego County, Palm Springs, Riverside County, and San Bernardino Mountains.
- Dickey, D. R., and Huey, Laurence, 10 song sparrows (*Melospiza m. cooperi*) from near Ventura.
- Dixon, J. B., 1 northern black swift (*Cypseloides n. borealis*) from near Escondido, San Diego County.
- Dunning, Duncan, 1 bat (*Antrozous p. pacificus*) from Feather River Experiment Station, Plumas County.
- Edwards, Hiram W., 1 pelican (*Pelecanus erythrorhynchos*) from near Colusa, Colusa County.
- Emmel, Dr. V. E., 2 amphibians (*Amphiuma tridactyla*), supposed to be from Louisiana.
- Feuzi, C., 1 snake (*Diadophis amabilis*), from Santa Barbara.
- Garlough, F. E., skin of ground squirrel (*Citellus mollis*), from near Ament, Lassen County.
- Geiselhart, Miss Josephine, 1 amphibian (*Ambystoma tigrinum*); 2 birds (*Buteo b. calurus*, *Tyto pratincola*), from Concord, Contra Costa County.
- Gignoux, Claude, slab of valley oak with almonds stored by California woodpecker (*Melanerpes f. bairdi*), from near Gridley, Butte County.
- Goldsmith, G. W., 20 reptiles and 25 amphibians from Lafayette, Lafayette Parish, Louisiana.
- Gray, A. E., 5 skins with skulls of ground squirrels (*Citellus mollis*, *Amnospemophilus l. leucurus*) from near Susanville, Lassen County.
- Grinnell, Willard, 6 rodents (*Peromyscus m. gambeli*, *Microtus c. californicus*, *Thomomys b. bottae*), from Berkeley.
- Hands, F. H., 24 mammals (skulls, skeletons, horns, or bodies in alcohol), 1 bird, 7 reptiles, 2 amphibians, all from Chiricahua Mountains, Arizona.
- Hanna, W. C., 1 ring-necked snake (*Diadophis amabilis*); 2 lizards (*Colonyx variegatus*, *Gerrhonotus s. webbi*), the latter with four tails, from near Colton, San Bernardino County.
- Hartung, Esther, 2 birds (*Vermivora c. lutescens*, *Carpodacus p. californicus*), from Colfax, Placer County.

- Heger and Harris Bird Store, Oakland, 122 foreign birds, including a collection of 110 skins from Australia.
- Howell, A. B., 35 birds, 1 skull of coyote, 1 body of mouse (*Phenacomys*, in alcohol), 3 amphibians, from southeastern Alaska, Yellowstone National Park, Washington, and Oregon.
- Hunt, Richard, 1 nest of Pine Grosbeak (*Pinicola e. californica*) from near Blairsden, Plumas County, and 39 bird skins from Massachusetts.
- Ijima, Prof. I., 50 birds, including 49 species, 44 of them new to the Museum, from neighborhood of Tokyo, Japan.
- Jackson, R. W., part of skeleton of Golden Eagle (*Aquila chrysaetos*).
- Kaehler, Frank W., 5 embryos of skunk (*Mephitis occidentalis*), and 1 coon (*Procyon psora*), from Wolf, Nevada County.
- Kellogg, Mildred, 1 jay (*Aphelocoma c. oocleptica*), from Berkeley.
- Kibbe, Mrs. A. S., 1 lutescent warbler (*Vermivora c. lutescens*), from Berkeley.
- Land, Carol G., 1 barn owl (*Tyto pratincola*), from Berkeley.
- Lander, Bessie M., 1 reptile (*Plestiodon skeltonianus*), from Strathmore, Tulare County.
- Lano, Albert, 1 skeleton of prairie chicken (*Tympanuchus americanus*) from Arkansas.
- Law, J. E., 87 birds, 212 mammals, 287 reptiles, 95 amphibians, mostly skeletons or bodies in alcohol, from points in California, New Mexico, and Arizona, chiefly from the Chiricahua Mountains.
- McLean, Donald D., 6 birds (*Marila valisineria*, *Zonotrichia l. nuttalli*, *Aeronautes melanoleucus*), including 1 adult and 3 young of the latter, also 1 nest; all from points in Alameda and Contra Costa counties.
- McLean, John L., 1 pair of antlers of mule deer (*Odocoileus hemionus*), 1 skin of mountain lion (*Felis oregonensis*), 1 set of eggs of valley quail (*Lophortyx c. vallicola*), all from near Coulterville, Mariposa County.
- McMillan, E., 1 western red bat (*Nycteris b. teliotis*), from near Sacramento.
- Meyer, Dr. K. F., 1 monkey.
- Miller, Miss Irene, 1 hoary bat (*Nycteris cinerea*), from Chowehilla, Madera County.
- Mitchell, Hon. Mason A., 1 egg of Tooth-billed Pigeon (*Didunculus strigirostris*), from western Samoa.
- Mueller, Carl S., and Mueller, Julius J., 231 skins of birds, including 19 species and subspecies new to the Museum; many specimens from Marysville, Yuba County, and other California points; others from places outside the state.
- Neale, George, 14 embryos of beaver (*Castor c. subauratus*), from Yolo County.
- Osack, H. R., 6 foreign Birds (*Zenaida r. vinaceo-rufa*, *Starnoenas cyanocephala*, *Columba gymnophthalma*, *Columba squamosa*, *Macropygia leptogrammica*, *Goura coronata*); and one nearly albino spoonbill (*Spatula clypeata*), from Buena Vista Lake, Kern County.
- Parker, Arthur, 33 hawks (involving the species: *Archibuteo ferrugineus*, *Archibuteo l. sanctijohannis*, *Buteo b. calurus*, *Circus hudsonius*, *Falco mexicanus*, *Accipiter cooperi*); 1 short-eared owl (*Asio flammeus*); 1 raven (*Corvus c. sinuatus*); all from general vicinity of Firebaugh, Fresno County.

- O'Neil, Gordon R., 1 gray squirrel (*Sciurus g. nigripes*), from Los Gatos, Santa Clara County.
- Palmer, R. H., 1 woodrat (*Neotoma f. macrotis*), from Ventura County.
- Pierce, Wright M., 34 fox sparrows (*Passerella i. sinuosa* and *P. i. megalorhynchus*) from vicinity of Claremont, Los Angeles County.
- Rabb, D. S., 1 quail (*Coturnix a. coturnix*), purchased in Calcutta, India.
- Riley, J. H., 17 mammals and 3 birds, all from Falls Church, Virginia.
- Robison, Ansel W., 5 foreign birds (*Emberiza citrinella*, *Grus lilfordi*, *Gallinula rufax*, *Electus roratus*, *Lorius garrulus*).
- Rowley, John, weathered fragment of antler of Roosevelt elk (*Cervus roosevelti*), from Pit River, Shasta County.
- Scribner, Ione D., 1 Valdez fox sparrow (*Passerella i. sinuosa*), from Coalinga, Gold, Madera County; and 1 phainopepla (*Phainopepla nitens*).
- Smith, F. J., 1 great blue heron (*Ardea herodias*), from Circleville, Ohio.
- Standiford, Edgar, 1 skull of mountain lion (*Felis oregonensis*), from near Merced, Merced County.
- Storer, Tracy I., 7 birds, 1 bird's nest, 6 mammals, 6 reptiles, 1 amphibian from Berkeley and near Ukiah, Mendocino County.
- Storer, Tracy I., and McLean, D. D., 2 nests of birds (*Agelaius p. californicus*, *Astragalinus lawrencei*), from Contra Costa County.
- Streat, Emma, 1 Lewis Woodpecker (*Asyndesmus lewisi*), from Sebastopol, Sonoma County.
- Strong, W. D., 1 surf scoter (*Oidemia perspicillata*), from Richmond, Contra Costa County, and the skeleton of a flicker (*Colaptes c. collaris*) from Berkeley; 2 small mammals taken from stomach of a short-eared owl (*Asio flammeus*), from Bay Farm Island, Alameda County.
- Sumner, Dr. Francis B., 4 white-footed mice (*Peromyscus b. rowleyi*), from San Jacinto Mountains, Riverside County.
- Tyler, John G., 1 hoary bat (*Nycteris cinerea*), from Santa Cruz.
- Vorhies, Prof. Chas. T., 1 Gila Monster (*Heloderma suspectum*), received alive from near Tucson, Arizona.
- Walker, Alex, 16 rodents (*Microtus*, *Zapus*, *Thomomys*), from Tillamook County, Oregon.
- Walker, Ernest P., 6 amphibians (*Bufo boreas*, *Rana*) and 3 birds (*Lundia cirrhata*, *Glaucidium g. grinnelli*, *Dendragapus o. fuliginosus*), from Alaska.
- Wells, D. E., extra large specimen (reported to have been a sheep killer) of valley coyote (*Canis achropus*), from Wheatland, Yuba County.
- Willett, George, 4 water birds (*Clangula islandica*, *Aphriza virgata*), 2 mammals (*Sciuropterus* and *Mustela*), all from Alaska.
- Wilson, Chas. J., 43 study-skins of English Sparrow (*Passer domesticus*) from various points in England, Australia, and New Zealand.
- Wood, Dr. Casey A., 2 hoatzins (*Opisthocomus hoatzin*), from Berbice, British Guiana.
- Wright, Curtis, Jr., 1 brown pelican (*Pelecanus californicus*), from West Berkeley.
- Zeile, Miss Elsie, 1 reptile (*Plestiodon skiltonianus*), from Fairfax, Marin County.

COLLEGE OF AGRICULTURE

AGRICULTURAL EDUCATION DIVISION

Griffin, Prof. F. L., a collection of 136 books and 850 bulletins and pamphlets on agriculture and allied subjects.

AGRICULTURAL ENGINEERING DIVISION

New Way Motor Company, Lansing, Mich., a sectional gas engine.

Avery Company, Sacramento, a 4-cylinder motor.

Baker, Hamilton & Pacific Company, San Francisco, a Fowler cultivator.

ANIMAL HUSBANDRY DIVISION

Vogel, H. E., 1 Holstein bull, Imperial Aaggie Mead No. 293402.

Rush, Senator B. F., Suisun, 1 Shorthorn heifer, Mary Anne Rush, No. 917771.

Bishop Bros., San Ramon, 1 Shropshire ewe, No. 527927.

IRRIGATION INVESTIGATIONS DIVISION

California Corrugated Culvert Company, Berkeley, 1 12-inch "Calco" slide head-gate fitted to 5 feet of corrugated pipe.

NUTRITION DIVISION

Aluminum Utensil Company, San Francisco, 1 one-gallon aluminum cooking pot.

PLANT PATHOLOGY DIVISION

Phillipps, Miss E. H., 34 numbers of Journal Phytopathology.

POMOLOGY DIVISION

(Davis)

Niagara Spray Company, 1 hand duster.

Eastbay Chemical Company, Oakland, 10 gallons Zeno oil spray.

General Chemical Company, San Francisco, 50 lbs. B.T.S. compound.

Sherwin-Williams Company, San Francisco, 10 gallons Spra-Mulsion.

Plant Introduction Field Station, U. S. Department of Agriculture, Chico, a number of trees and seedlings.

(Mountain View)

Spencer, W. A., 1 gallon Carco.

Paraffine Companies, Inc., 2 cans Pabco pruning paste.

Glidden Company, 35 lbs. dry lime-sulphur.

Sherwin-Williams Company, 1 25-lb. drum dry lime-sulphur for dusting.

Balfour-Guthrie Company, 100 lbs. B.T.S.

Seed and Plant Introduction Gardens, U.S. Department of Agriculture
Chico, 8 jujube plants.

Central Creameries, 3 lbs. casein spreader.

POULTRY DIVISION

Lillard, J. B., 2 barred Plymouth Rock hens, a pullet and a barred Plymouth Rock male.

Lyding, Mr., a silver spangled Hamburg male.

Pioneer Incubator Company, Los Angeles, a Pioneer blue flame coal oil brooder stove with 52-inch in diameter canopy.

Lyon Electrical Company, El Cajon, 1 Mansur-Lyon electrical brooder, 72 inches in diameter, with a capacity of 500 chicks.

VITICULTURE DIVISION

Phaudler Enamelware Products Company, San Francisco, 1 15-gallon glass lined vacuum pan.

Los Angeles Olive Growers' Association, Los Angeles, approximately 200 lbs. of olives and about 150 cans; also smaller lots of olives and cans from several other factories in northern California.

California Pear Growers' Association, approximately 7 tons of pears for experimental dehydration at Davis, and 1 ton of cull pears for pear syrup experiments.

Madewell Pipe and Culvert Company, Oakland, 1 small home-size sheet metal evaporator.

California Fruit and Apricot Growers of San Jose, approximately \$25 worth of seeded prunes and apricot pits.

LECTURES AND ADDRESSES

SUMMER SESSION, 1920

CRIMINOLOGY LECTURES

Major Paul E. Bowers, of the United States Public Health Service, formerly in charge Psychopathic Laboratory, Indiana State Prison and the Indiana Hospital for Insane Criminals:

July 22—Criminality and Mental Defects; Causes of Crime from a Laboratory Point of View.

July 23—A Psychopathic Laboratory; Measurements of the Criminal in the Laboratory.

Dr. A. L. Stanley, Physician, San Quentin Prison:

July 19—The History of the Prisons of California; Medical Problems at San Quentin.

MISCELLANEOUS LECTURES

Julean Arnold, Commercial Attache in Peking, China:

July 2—Opportunities for Americans in the New China.

Tom Peete Cross, Professor of English and Celtic in the University of Chicago:

July 12—The Poetry of the Ancient Celts.

Walter Barrow Currier, Head of Vocational and Fine Arts Department, Lincoln High School, Los Angeles:

July 26—Industrial Art as a National Need.

Stephen P. Duggan, Director of the Institute of International Education, New York:

June 25—Relations in Higher Education Between the United States and Europe.

Mrs. Minnie Maddern Fiske:

June 22—Economic and Humane Factors of Food in Animal Conservation.

John N. Force, Associate Professor of Epidemiology; recently Bacteriologist at the Panama Canal:

July 12—The Great Adventure: Panama 1519-1919.

Clark W. Hetherington, Supervisor, Department of Physical Education, State Board of Education:

June 24—State Requirements for Credentials in Physical Education.

Morris Jastrow, Jr., Professor of Semitic Languages, University of Pennsylvania:

July 13—The Relations between Eastern and Western Civilizations.

July 15—East and West after the War, with special reference to America's Interest in the Near East.

Mark Jefferson, Professor of Geography, State Normal School, Ypsilanti, Michigan:

July 15—Chile: An American Land Where Immigrants need not Apply.

July 26—The Argentine Melting Pot.

July 27—Southern Brazil in 1918.

J. C. Merriam, Professor of Palaeontology and Historical Geology, Dean of the Faculties:

June 22—The Purpose of Teachers.

Paul W. Merrill, of the Mount Wilson Solar Observatory:

June 24—The Chemistry of the Stars.

Odell Shepard, Professor of English, Trinity College, Hartford:

July 27—Reading of the Everlasting Mercy: John Masefield.

July 28—Reading of Dauber; John Masefield.

July 29—The Daffodil Fields: John Masefield.

Mary F. Williams:

“California in the Days of the Gold Rush.”

June 30—Self-Determination in 1849.

July 7—The Turmoil of 1850.

July 14—The Vigilance Committee of 1851.

MISCELLANEOUS LECTURES (SOUTHERN BRANCH)

Stockton Axson, Professor of English, Rice Institute:

June 24—Education for Citizenship.

John Collier, California State Commission of Immigration and Housing:

July 29—Why Democracy?

W. F. Dearborn, Professor of Educational Psychology, Harvard University.

July 15—Measures of the Intelligence and Training of School Children.

Dickie:

July 27—Social Hygiene.

M. H. Flint, Vice-President, Los Angeles Trust and Savings Bank:

July 21—Savings and Investments for the Individual and the Family.

W. M. Hart, Professor of English and Dean of the Summer Sessions:

July 19—Guy de Maupassant and the Short Story.

H. C. Hockett, Professor of American History, Ohio State University:

July 22—Americanism versus Internationalism.

J. A. Lomax, of Texas:

July 23—Songs of the Cowboy.

R. Michaud, Professor of French:

July 21—Glimpses of the Land of France.

T. H. Reed, Professor of Municipal Government:

July 1—Law, Bolshevism, and Society.

Stephani Schultze, of Los Angeles:

June 30—Hour of Story-Telling.

Harriet Vittem, Headresident of Northwestern University Settlement:

July 8—The New Fatherland.

C. D. von Neumayer, Associate Professor of Public Speaking and Dramatic Art:

July 8—Reading three modern plays.

B. M. Woods, Professor of Aerodynamics and University Examiner:

July 14—The Airplane and its Inventors.

ACADEMIC YEAR, 1920-21

ANTHROPOLOGY LECTURES

Paul L. Faye, Associate Curator of the Anthropological Museum, and
Lecturer in Anthropology.
Mar. 22—Inca Skulls and Mummies.

ASTRONOMY LECTURES

J. P. Ault, Commander of the "Carnegie":
Mar. 18—Cruise Six of the Yacht Carnegie.
W. W. Campbell, Director of the Lick Observatory:
Mar. 25—The Life Story of a Star.
Harlow Shapley, of Mount Wilson Solar Observatory:
Feb. 25—New Stars and Variable Stars.

BOTANY DEPARTMENT LECTURES

E. D. Merrill, Director of the Philippine Bureau of Science, Manila:
Oct. 25—The Vegetation of the Philippine Islands.
W. A. Setchell, Professor of Botany:
Nov. 20—The Vegetation of Tutuila Island, Samoa.

ECONOMICS DEPARTMENT LECTURE

Paul Scharrenberg, Secretary-Treasurer California State Federation of
Labor:
Oct. 13—Talking to Labor in Europe.

EDUCATION DEPARTMENT LECTURES

Jenabe F. Mazandarani, formerly Professor of Logic and Jurisprudence,
Imperial University, Teheran, Persia:
Mar. 16—Persian Education and the Modern Movement.
H. B. Wilson, Superintendent of Schools, Berkeley:
Nov. 17—Some Essentials of the Socialized School.

ENGLISH DEPARTMENT LECTURES

Charles Mills Gayley, Professor of the English Language and Literature:
Sept. 10—Act III of "Caesar and Cleopatra" by George Bernard
Shaw.
Sept. 17—Act III.
Sept. 24—Act IV.
Oct. 1—Act IV.
Oct. 8—Act V.
Oct. 15—"The Devil's Disciple," by George Bernard Shaw. (1)
Oct. 22—"The Devil's Disciple," by George Bernard Shaw. (2)
Oct. 29—"The Devil's Disciple," by George Bernard Shaw. (3)
Nov. 5—"Captain Brassbound's Conversion," by George Bernard
Shaw. (1)
Nov. 12—"Captain Brassbound's Conversion," by George Bernard
Shaw. (2)
Nov. 19—"Captain Brassbound's Conversion," by George Bernard
Shaw. (3)
Dec. 3—The Philosophy of George Bernard Shaw.

ENGLISH DEPARTMENT READINGS

- A. E. Anderson, Associate in English:
Oct. 19—A Woodland Prophet—Henry David Thoreau.
- A. G. Brodeur, Assistant Professor of English:
Nov. 16—The Autocrat of the Breakfast Table—Oliver Wendell Holmes.
- H. L. Bruce, Associate Professor of English:
Oct. 12—Tennessee's Partner—Bret Hart.
The Jumping Frog of Calaveras—Mark Twain.
- Leonard Bacon, Assistant Professor of English:
Apr. 1—Some Apologetic Remarks on Prosody.
- W. M. Hart, Professor of English and Dean of the Summer Sessions:
Oct. 5—Rhymes of a Homesteader.
- S. J. Hume, Assistant Professor of Dramatic Literature and Art:
Nov. 23—Dr. Faustus—Christopher Marlowe.
- B. H. Lehman, Assistant Professor of English:
Nov. 9—John Drinkwater's "Abraham Lincoln."
Mar. 4—Research Viewed in Relation to Criticism: Babbitt's "Rousseau and Romanticism."
- W. W. Lyman, Jr., Associate in English and Celtic.
Nov. 2—Padraic Colum and Seumas O'Sullivan.
- S. C. Pepper, Instructor in Philosophy:
Feb. 18—The Place of the Critic.
- T. F. Sanford, Associate Professor of English:
Oct. 26—Tennyson.
- R. P. Utter, Associate Professor of English:
Feb. 4—The Case Against Grammar.

FACULTY RESEARCH LECTURE

- Charles Mills Gayley, Professor of the English Language and Literature:
Mar. 22—The English Poetry of the War.

FINE ARTS ASSOCIATION LECTURES

- Irving Pichel:
Oct. 12—The Theatre and the University.
- Leonard Bacon, Assistant Professor of English:
Feb. 8—Rhythm in English Verse.

FRENCH DEPARTMENT LECTURES

- R. Michaud, Professor of French:
Mar. 17, 31, Apr. 7, 14, 21—Les Poetes Francaise D'Aujourd'hui.

HITCHCOCK LECTURES

- Jules Bordet, Professor of Bacteriology and Epidemiology, University of Brussels, and Director of the Pasteur Institute at Brussels, Belgium:
Nov. 22—The Theories of Coagulation of Blood.
Nov. 23—The Theories of Anaphylaxis.
Nov. 24—Some New Results Relative to the Conflict of the Organism with "Invading" Microbes.

ITALIAN DEPARTMENT LECTURES

- R. Piccoli, Lecturer in Italian Literature and Institutions:
Oct. 11—Modern Italy.
Dec. 6—St. Francis of Assisi.

INTERNATIONAL RELATIONS LECTURES

- F. H. Probert, Professor of Mining and Dean of the College of Mining:
Oct. 28, Dec. 9—International Aspects of Natural Resources.
M. G. Huidobro, Consul-General of Chile in San Francisco:
Mar. 17—Economic Conditions in Chile.
F. M. Russell:
Mar. 24—Present Economic Conditions in the Saar Valley.

MATHEMATICS DEPARTMENT LECTURES

- F. Cajori, Professor of the History of Mathematics:
Oct. 19—Magic Squares in the Orient and Occident.
Nov. 4—Surveying Instruments of Long Ago (illustrated).
Jan. 31—The Evolution of the Dollar Mark.
Feb. 28—Medieval Methods of Computing on the Exchequer, etc.

MINING DEPARTMENT LECTURE

- F. H. Probert, Professor of Mining and Dean of the College of Mining:
Oct. 28—International Aspects of Natural Resources.

MISCELLANEOUS LECTURES

- Richard Barrows, Special Commercial Commissioner of the Chilean Government in the United States:
Feb. 7—The Life, Resources and Scenery of Chile (illustrated).
E. B. Bryan, President of Colgate University:
Apr. 13—The Perils of Education.
Bessie A. Dwyer:
Nov. 10—The Philippines, Yesterday and Today (illustrated).
Sherwood Eddy, National Secretary for Asia of the Young Men's Christian Association:
Jan. 18—The Challenge of the Present World Situation.
Jan. 19—The Challenge of Student Problems.
Jan. 20—The Challenge of a Routine Faith for the Modern Man.
Lieutenant-Colonel C. W. Furlong, Fellow of the Royal Geographical Society:
Mar. 28—Turkey, the Cross Ways of the World.
W. T. Grenfell, of Labrador:
Feb. 11—The Romantic Story of Labrador.
Masuku Harada, former President of Doshisha University, Kioto, Japan:
Oct. 14—A public lecture.
Mrs. Herbert Hoover:
Jan. 17—American Help for Eastern Europe.

Archbishop Edward J. Hanna, of San Francisco:

Mar. 1—The Individual and the Present Crisis.

Mar. 3—Religion in the Life of the Community.

Sam Higginbottom, Agriculture Engineer:

Feb. 8—Agriculture in the Upbuilding of a Nation.

J. R. Howard, President of the American Farm Bureau Federation:

Mar. 18—The Farm Bureau Movement in America.

Elwood Mead, Professor of Rural Institutions:

Jan. 27—Rural Problems as Seen in the East.

A. A. Michelson, Professor of Physics in the University of Chicago:

Aug. 17—Recent Applications of Interference Methods.

T. H. Morgan, Professor of Experimental Zoology in Columbia University:

Mar. 24—The Interrelation of Mutation, Heredity and Development

M. O. O'Shaughnessy, City Engineer of San Francisco:

Jan. 26—Construction of the Hetch Hetchy Project.

Irving Pichel:

Feb. 23—The Theatre Today and Tomorrow.

R. Ramirez, Chilean Exchange Professor of Hispanic-American History:

Nov. 30—South America Today.

J. A. Scott, Sather Professor of Classical Literature; Head Professor of Greek in Northwestern University:

Mar. 31—The Dardanellas and Beyond.

Apr. 8—Ancient Lessons from Early Forms of Government.

PHILOSOPHY DEPARTMENT LECTURES

The Philosophy of Benedetto Croce

R. Piccoli, Lecturer in Italian Literature and Institutions:

Oct. 18—Language and Art.

Oct. 25—The Logic of Idealism.

Nov. 1—The Economic Will.

Nov. 8—The Moral Will.

Nov. 15—Philosophy and History.

Nov. 22—The Work of Croce.

PHILOSOPHICAL UNION LECTURES

G. P. Adams, Professor of Philosophy:

Oct. 29—The Organization of Human Values.

J. Loewenberg, Assistant Professor of Philosophy:

Nov. 19—Conflicting Trends in Idealism.

C. H. Rieber, Professor of Logic:

Sept. 24—The Philosopher's Quest.

G. M. Stratton, Professor of Psychology:

Jan. 28—Being Mutually Angry.

Feb. 11—Experiments on the Mind: Their Character and Value.

Feb. 18—The Subconscious and Its Importance.

Feb. 25—The Training of the Will.

Mar. 4—Where has Psychology Left Religion?

Mar. 11—The Teachings of Morals and Religion.

PHYSICS DEPARTMENT MEETINGS, LECTURES

- R. T. Birge, Assistant Professor of Physics:
Sept. 30—The Artificial Disintegration of Oxygen and Nitrogen, the Release of Atomic Energy, and the Discovery of a New Element—recent work of E. Rutherford.
- Elmer Dershem, Instructor in Physics:
Mar. 3—Stellar Photography and the Photoelectric Cell.
- E. E. Hall, Professor of Physics:
Oct. 28—Pyrometry and its Application of Optical Glass.
- L. T. Jones, Assistant Professor of Physics:
Jan. 22—The Peculiarities in the Velocity of Sound.
- V. F. Lenzen, Assistant in Physics:
Mar. 31—The Extension of the Quantum Theory to Systems of Several Degrees of Freedom.
- E. P. Lewis, Professor of Physics:
Apr. 14—The Charge of the Atomic Nucleus and the Law of Force at Small Distances.
- R. S. Minor, Professor of Physics:
Nov. 18—X-Ray Analysis of the Structure of Metals.
- G. A. Pomeroy, Assistant in Physics:
Feb. 17—Harmonic Oscillation of the Level of the Lakes.
- F. Slate, Professor of Physics, Emeritus:
Dec. 2—A Mechanical Pattern for other Energy Forms.
- W. J. Raymond, Associate Professor of Physics:
Mar. 17—A New Harmonic Curve Writer.
- W. H. Williams, Instructor in Physics:
The Gravitational Shift of Lines in the Solar Spectrum.

POLITICAL SCIENCE DEPARTMENT LECTURES

- Victor Andres Belaunde, Professor of International Law, University of San Marcos, Lima, Peru:
Feb. 10—South American Problems.
- Edgar Dawson, Professor of American Government:
Nov. 11—Education in the Science of Government.

PUBLIC SPEAKING DEPARTMENT READINGS

- Florence Lutz, Lecturer in Voice Culture:
Sept. 15—"Caesar and Cleopatra," by G. B. Shaw.
Oct. 6—"Faust: a Free Adaptation of Goethe's Poem," by Stephen Phillips and J. Comyns Carr.
Oct. 27—Shakespeare's "Midsummer Night's Dream."
Nov. 17—"An Ideal Husband," a comedy by Oscar Wilde.
Jan. 19—"The Famous Mrs. Fair."
Feb. 16—"T. Tembarom."
Mar. 2—"The Mysterious Stranger."
Mar. 16—"A Kiss for Cinderella."

SATHER LECTURES ON CLASSICAL LITERATURE

- J. A. Scott, Sather Professor of Classical Literature; Head Professor of Greek in Northwestern University:
- Feb. 9—Homer Among the Greeks.
 - Feb. 16—The Arguments of Wolf.
 - Feb. 23—Proofs from Language.
 - Mar. 2—The Unity of Homer: Proofs from Antiquities.
 - Mar. 9—The Unity of Homer: The Contradictions.
 - Mar. 16—The Unity of Homer: The Gods and Heroes.
 - Mar. 30—The Unity of Homer: Hector.
 - Apr. 6—The Unity of Homer: The Iliad and Odyssey.

SLAVIC LANGUAGES DEPARTMENT LECTURE

- A. Kaun, Associate in Russian:
- Nov. 22—Russia Mirrored in Art.

DEATHS OF MEMBERS OF THE UNIVERSITY

- Allen, Halsey Otis, a sophomore in the College of Letters and Science, April 6, 1921.
- Beekley, Archie Gordon, a sophomore in the College of Commerce, December 6, 1920.
- Brajnokiv, George Wladimir, a freshman in the College of Chemistry, May 9, 1921.
- Carbonell, Salvador C., a sophomore in the College of Agriculture, January 26, 1921.
- Crook, Ransford Ames, a sophomore in the College of Letters and Science, August 25, 1920.
- Gillespie, Alice Ogden, a sophomore in the College of Letters and Science, January 3, 1921.
- Gottlieb, Nicholas, a graduate student in the College of Letters and Science, October 12, 1920.
- Greene, Dr. Frances M., Supervisor of Field Work in Social Economics, February 8, 1921.
- Hays, John DeLaMater, a student in the University Farm School at Davis, February 20, 1921.
- Kircheck, Percy Lynn, a freshman in the College of Chemistry, May 7, 1921.
- Lewitt, William Breakley, M. D., Professor of Pediatrics, Emeritus, April 25, 1921.
- McMillan, Daniel Henry, a freshman in the Hastings College of the Law, October 7, 1920.
- Michael, Ellis LeRoy, Zoologist and Administrative Assistant in the Scripps Inst. for Biological Research, August 30, 1920.
- Morris, Edward William, a junior in the College of Mining, March 6, 1921.
- Osgood, Kate F., Assistant Supervisor of Practice Teaching in the Southern Branch of the University, April 8, 1921.
- Rees, Edward Stephen, a sophomore in the College of Mechanics, June 9, 1921.
- Rosson, Frank B., Instructor in Pathology, December 2, 1920.
- Woolley, Davis, a senior in the College of Letters and Science, April 2, 1921.

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PUBLISHED WRITINGS OF OFFICERS OF THE UNIVERSITY
July 1, 1920 to June 30, 1921

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ADAMS, G. P., Professor of philosophy.

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ADAMS, R. L., Professor of farm management.

California farm management is real business. California state fair annual, Sacramento union, supplement, p. 14-15, Sept. 1, 1920.

Making the big California ranches. University of California journal of agriculture, v. 6, p. 3-5, 27-28, Oct. 1920.

AITKEN, R. G., Astronomer, Lick observatory.

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The motion in some A double stars: Sixth note. *Ibid.*, v. 32, p. 60-61 Feb. 1921.

The nebulous disk surrounding Nova Aquilae III. *Ibid.*, v. 32, p. 231-32, Aug. 1920.

Notice to double star observers. Astronomical journal, v. 33, p. 145, April 1921.

The Pons-Winnecke comet. San Francisco bulletin, Mar. 15, 1921.

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ALLEN, J. T., Professor of Greek.

Review: Bentwick, N. Hellenism. Classical weekly, v. 14, p. 102-103, Jan. 24, 1921.

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ALLEN, W. E., Biologist and publicity secretary of Scripps institution for biological research.

A brief study of the range of error in micro-enumeration. American microscopical society, Transactions, v. 40, p. 14-25, Jan. 1921.

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ALVAREZ, W. C., Assistant professor of research medicine.

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ANDERSON, A. E., Associate in English.

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APPLETON, V. B., Instructor in pediatrics.

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ASTER, A. K., Assistant in physics.

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AUSTIN, C. L., Assistant in pomology, University farm.

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BABCOCK, E. B., Professor of genetics.

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A group of poems: Love; The goat; Reflections of a paralytic; Patterns; Tonight, I am wanting a letter. *Contemporary verse*, v. 11, p. 45-48, Mar. 1921.

House (verse). University of California, *Occident*, v. 67, p. 147, Mar. 1921.

How like a mountain ash (verse). *Ibid.*, v. 66, p. 226, Dec. 1920.

Insanity; Finality (verses). *Measure*, no. 1, p. 5, 6, April 1921.

I should like to live in a ballad world (verse). *Nation*, v. 112, p. 626, April 27, 1921.

Navaho poems. *Measure*, no. 4, p. 12, June 1921.

Red and white (story). University of California, *Occident*, v. 66, p. 163-65, Nov. 1920.

Verses: Into the stillness of your grief; Hands; They have built them many houses; Under an umbrella; Petals for Iola. *Texas review*, v. 6, p. 1-5, Oct. 1920.

WHITMAN, A. R., Teaching fellow in geology.

Diffusion in vein-genesis at Cobalt. *Economic geology*, v. 15, p. 136-49, Mar. 1920.

WHITTEN, J. C., Professor of pomology.

The apricot in California. California state fair annual, Sacramento union, Supplement, p. 38-40, Sept. 1, 1920.

Commercial value of standardization. California state department of agriculture, Monthly bulletin, v. 9, p. 637-638, Dec. 1920.

Factors for the nurserymen to consider in bud selection. *Ibid.*, v. 9, p. 354-55, May 1921.

Fruit growing in California. University of California journal of agriculture, v. 7, p. 11, Mar. 1921.

Planting and shaping young trees. Contra Costa county farm bureau monthly, v. 3, p. 3, 12, Aug. 1920.

Reasons for thinning peaches. Associated grower, v. 1, p. 2, May 4, 1920.

Transplanting deciduous fruit trees. California state department of agriculture, Monthly bulletin, v. 9, p. 73-75, Mar. 1920.

WEEKS, W. S., Associate professor of mining.

Air receiver calculations. Engineering and mining journal, v. 111, p. 988-89, June 1921.

The education of the mining engineer. Mining and scientific press, v. 122, p. 321-23, Mar. 1921.

Gas box for safety lamps. Engineering and mining journal, v. 111, p. 912, May 1921.

Problems in mine ventilation. Mining and scientific press, v. 121, p. 117-22, July 1920.

Testing and application of ventilating fans. *Ibid.*, v. 121, p. 11-15, July 1920.

Translation into Spanish of articles originally published in the Mining and scientific press:

Meda del aire de ventilación en las minas. El ingeniero y contratista, v. 11, p. 38-44, Dec. 1920.

Pruebas y usos de los ventiladores de minas. *Ibid.*, v. 12, p. 35-39, Jan. 1921.

Rozamiento de las corrientes de ventilación en las minas. *Ibid.*, v. 11, p. 38-42, July 1920.

Teoría del ventilador centrífugo. *Ibid.*, v. 11, p. 33-38, Sept. 1920.

WHIPPLE, G. H., Professor of research medicine, Dean of medical school and Director of Hooper foundation for medical research.

Blood regeneration following simple anemia (*with* F. S. Robbins and C. W. Hooper). I, Mixed diet reactions; II, Fasting compared with sugar feeding; III, Influence of bread and milk, cracker meal, rice, and potato, casein and gliadin in varying amounts and combinations; IV, Influence of meat, liver and various extractives, alone or combined with standard diets; V, Influence of Bland's pills and hemoglobin. American journal of physiology, v. 51, p. 151-66, 167-205, 206-235, 236-62, 263-82, Sept. 1920.

Blood regeneration following simple anemia, iron and arsenic as influencing. VI, Negative influence of familiar drugs upon the curve of hemoglobin regeneration following hemorrhage (*with* F. S. Robbins and C. W. Hooper). Archives of internal medicine, v. 27, p. 591-603, May 1921.

Blood volume studies. V, The carbon monoxide method: its accuracy and limitations; VI, Plasma volume as determined by hemoglobin injection; VII, Comparative values of Welcker, carbon monoxide and

dye methods for blood volume determinations. Accurate estimate of absolute blood volume. *American journal of physiology*, v. 54, p. 313-27, 328-35, 336-60, June 1921.

Liver regeneration following chloroform injury as influenced by the feeding of casein or gelatin. *Archives of internal medicine*, v. 27, p. 679-87, June 1921.

WICKSON, E. J., Professor of horticulture, Emeritus.

Editorials: Pacific rural press, 1919-1920.

WILEY, H. R., Special lecturer on pharmacal jurisprudence.

My horse (poem). *Scribner*, v. 68, p. 703-704, Dec. 1920.

WILLIAMS, E. T., Agassiz professor of Oriental language and literature.

Drought and flood in China: syndicate letter for benefit of Famine relief fund. Famine relief fund syndicate, May 1921.

Conflicting national policies of Japan and the United States. In Pitkin, W. B. Must we fight Japan? p. 423-62, 1921.

Review: Clarke, J. I. C. Japan at first hand. 1918. Geographical review, v. 11, p. 318, April 1921.

WILLIAMS, W. H., Instructor in physics.

Exterior ballistics. Field artillery school, v. 1, p. 65, April 1920.

WILSON, H. B., Lecturer in education.

The course of study in the modern school. Berkeley, Board of education, 14 p., Jan. 1921.

The redirection of high school instruction. 286 p. Philadelphia, Lippincott, 1921.

WOLL, F. W., Professor of animal nutrition.

Cottonseed as a stock feed. Kern county farmers' weekly, Dec. 18, 1920.

Feeding for advanced registry records. California cultivator, v. 56, p. 430-31, Mar. 26, 1921.

Heavy vs. Light grain feeding for dairy cows (with E. C. Voorhies and C. V. Castle). University of California, Agricultural experiment station, Bulletin 323, 21 p., July 1920.

State register of production for grade cows. California cultivator, v. 56, p. 395, Mar. 19, 1921.

Testing milk and its products (with E. H. Farrinton). Ed. 25, 297 p. Madison, Mendota book co., 1920.

WOODMAN, A. M., Teacher in botany, University farm.

Acacia accessions from Australia. Garden magazine, v. 32, p. 200-202, Dec. 1920.

WRIGHT, A. T., Professor of law.

California partnership law and the Uniform partnership act. California law review, v. 9, p. 117-47, Jan. 1921; p. 206-227, Mar. 1921; p. 306-331, May 1921.

WRIGHT, H. W., Assistant in psychiatry.

Social aspects of mental defect. American journal of public health, v. 11, p. 431-34, May 1921.

WRIGHT, W. H., Astronomer in the Lick observatory.

The displacements of the hydrogen absorption lines in the spectrum of Nova Geminorum in March, 1912; with remarks upon their interpretation. Royal astronomical society of London, Monthly notices, v. 81, p. 191-200, Jan. 1921.

- Further note on the displacement of the absorption lines in the spectrum of Nova Geminorum (2) in March, 1912. *Ibid.*, v. 81, p. 501-509, June 1921.
- Further note on the spectrum of Nova Cygni. Astronomical society of the Pacific, Publications, v. 32, p. 275-76, Oct. 1920.
- On spectroscopic binaries and the determination of parallax. *Ibid.*, v. 33, p. 47-50, Feb. 1921.
- On the occurrence in the spectrum of Nova Cygni of the moving doublet near H delta. *Ibid.*, v. 32, p. 340, Dec. 1920.
- On the occurrence of the enhanced lines of nitrogen in the spectra of the Novae. Royal astronomical society of London, Monthly notices, v. 81, p. 181-89, Jan. 1921; Second note, *ibid.*, v. 81, p. 412-14, Mar. 1921.
- A preliminary account of the spectrum of Nova Ophiuchi (1919). University of California, Publications of Lick observatory, v. 14, pt. 1, 26 p., 1921.
- The spectrum of Nova Cygni III. Astronomical society of the Pacific, Publications, v. 32, p. 273-75, Oct. 1920.
- Review: Ross, F. E. On the relation between photographic density, light intensity, and exposure time; photographic sharpness and resolving power. *Ibid.*, v. 33, p. 98-101, April 1921.
- Review: Stratton, F. J. M. The spectrum of Nova Geminorum II. Observatory (London), v. 44, p. 157-54, May 1921.

SUPPLEMENT

Articles omitted from Report of 1919-1920

- CHAPMAN, C. E., Associate professor of Latin American and Californian history.
- Acercamiento cultural hacia las repúblicas suramericanas. La Nación (Santiago, Chile), Mar. 12, 1920.
- Cortés and California. Grizzly bear magazine, v. 25, p. 3-5, Aug. 1920.
- The Cross and Buddha: how Christianity saved the Pacific coast from Japanese domination three hundred years ago. Sunset, v. 43, p. 43, 44, 58, 60, 64, Nov. 1919.
- Gali and Rodríguez Cermenho: exploration of California. Southwestern historical quarterly, v. 23, p. 204-213, Jan. 1920.
- The Jesuits in Baja California, 1697-1768. Catholic historical review, v. 6, p. 46-58, April 1920.
- Mexico, the mother of California. California southland, p. 3-4, Oct.-Nov. 1919; p. 3-4, Dec. 1919-Jan. 1920.
- The name "California": its origin and application. Grizzly bear magazine, v. 26, p. 3-5, Dec. 1919.
- The Pacific ocean in history. In Semicentenary celebration . . . conference on international relations, p. 362-63, 1919.
- Sebastián Viscalino: exploration of California. Southwestern historical quarterly, v. 23, p. 285-301, April 1920.
- South America as a field for an historical survey. American historical association, Annual report, 1916, v. 1, p. 201-209, 1919.
- South America: its lands, its peoples and its problems. 12 p. San Francisco foreign trade club, Foreign trade lecture, no. 43, 1919.
- Review: Fletcher, C. B. Problems of the Pacific. Mississippi Valley historical review, v. 6, p. 563-64, Mar. 1920.

KROEBER, A. L., Professor of anthropology and Curator of the Anthropological museum.

The history of Philippine civilization as reflected in religious nomenclature. American museum of natural history, Anthropological papers, v. 19, p. 35-67, 1920.

LANGE, A. F., Professor of the theory and practice of education and Director of the School of education.

The junior college. Sierra educational news, v. 16, p. 16-18, Mar. 31, 1921.

MEAD, C. D., Associate professor of elementary education.

Review: Judd, C. H. The evolution of a democratic school system. Educational administration and supervision, v. 6, p. 111-12, Feb. 1920.

RANDALL, M., Assistant professor of chemistry.

The heat of solution and the partial molal heat content of the constituents in aqueous solutions of sodium chloride (*with* S. S. Bisson). Journal of American chemical society, v. 42, p. 347-67, 1920.

STORER, T. I., Field naturalist, California museum of vertebrate zoology.

The fly-catching habit among birds. *Ibid.*, v. 21, p. 125, May 1919.

Review: Baldwin, S. P. Bird banding by means of systematic trapping. *Ibid.*, v. 22, p. 114-15, May 1920.

Review: Bent, A. C. Life histories of North American diving birds—Order Pygopodes. *Ibid.*, v. 22, p. 45-46, Jan. 1920.

WILLIAMS, E. T., Agassiz professor of Oriental language and literature.

Open ports of China. Geographical review, v. 9, p. 306-334, April-June 1920.

SUNDAY HALF-HOURS OF MUSIC IN THE GREEK THEATRE

July 1, 1919, to June 30, 1920

- July 4—Rey del Valle, soprano; Lena Frazee, soprano; Mrs. Peyton McAllister Harbold and Beatrice Clifford, accompanists.
- July 11—Summer Session Orchestra, under direction of Sascha Jacobinoff, assisted by Miss Madge Quigley and James R. Breakey, Jr.
- July 18—Miss Madge Quigley, pianist; James R. Breakey, Jr., pianist; Miss Ethel Johnson, soloist; Mrs. Suzanne Pasmore Brooks, accompanist.
- July 25—Summer Session Orchestra, Sascha Jacobinoff, conductor; Summer Session Chorus, Frederick Alexander, conductor.
- Aug. 1—Irving Krick, pianist.
- Aug. 15—The Tamalcrafters: "Little De Blois," soprano; Laura J. Olmsted, violin; Bernard G. Marshall, clarinet; Inez Carusi, harp; Fred Emerson Brooks, reader.
- Aug. 22—Marie Hughes Macquarrie, harpist, assisted by Christine Howells, flutist.
- Aug. 29—Madame Lizeta Kalova, violinist, accompanied by Albert King.
- Sept. 5—Lillian S. Dwight, contralto; Pauline Harris, pianist; Mrs. Milton E. Blanchard, accompanist.
- Sept. 12—Marion Frazer, pianist; Marie Partridge Price, mezzo-soprano, and Constance Mering.
- Sept. 19—Horace V. Benson, baritone, assisted by Antonio de Grassi, violinist, and Frederick Maurer, Jr., accompanist.
- Sept. 26—Orley See, violinist, assisted by T. F. Freeman, pianist.
- Oct. 3—Mrs. Ward A. Dwight, contralto, accompanied by Mrs. G. F. Stall.
- Oct. 10—Marian Cavanaugh, child pianist.
- Oct. 17—R. O. T. C. Band: L. W. Allen, Assistant in Music, director.
- Oct. 24—Florence Cole-Talbert, lyric soprano.
- Oct. 31—Alameda High School Glee Club and Orchestra.
- Nov. 7—Mary Newson '21, soprano, and Dorothy Dukes '22, 'cellist. Christine Newson '22, and Martha Dukes Parker, accompanists.
- Nov. 14—Southern Pacific Glee Club: J. A. Weida, director; Ruth Pepper and T. L. Smith, accompanists.

- Nov. 21—Norma MacPherson, pianist, assisted by Gretchen Zumpli, violinist.
- Mar. 6—Four vocalists under direction of H. B. Pasmore: Althea Burns, Rosabelle Scott, Cletus Howell, and H. B. Pasmore.
- Mar. 13—Mme. Marie Leidner-Jansen, in piano interpretations of Henry Jansen's compositions.
- Apr. 3—Presentation of William Shakespeare's "Communion Service in E Flat" by the vested choir (augmented to fifty voices) of St. Stephen's Episcopal Church, San Francisco. H. B. Pasmore, organist and director.
- Apr. 10—Concert by the Treble Clef Society. Paul Steindorff, director.
- Apr. 17—Mills College Choir. Mrs. Sweesey, director.
- Apr. 24—Recital by the pupils of Mr. Homer Henley.
- May 1—Concert by the pupils of Mr. Homer Henley, of San Francisco: Lorraine Sands Mullin, Lillian Hoffmayer Heyer, and M. Louise Lawson. Edith Louise O'Brien, accompanist.
- May 15—Miss Victorine Hartley, assisted by Miss March Clements, Miss Etta Ellerhorst, and Miss Mabel Wilson. Chorus of six hundred students from the Berkeley intermediate schools.
- May 22—Master Leonard Hickson, trumpet soloist, assisted by Miss Vernal Deane, 'cellist.
- May 29—Thirty-second United States Infantry Band. C. W. Ferguson, Director.
- June 5—Schubert Club of Sacramento. Percy A. R. Dow, director.
- June 12—Oakland Orpheus Club, assisted by Charles E. Bulotti, tenor, and Miss Bessie Beatty Roland, accompanist.
- June 19—Mrs. Ward A. Dwight, contralto; Mrs. Hughes MacQuarrie, harpist; and Mrs. Horatio F. Stoll, pianist.
- June 26—Rosamonde Joyzelle, in "A Sacred Pantomime in Classic Shades." Assisted by Mrs. T. Arthur Rickard, soprano; Frederick Maurer, pianist; Mrs. Milton H. Shutes, violinist; and Mrs. Donald G. Schnabel, 'cellist.

UNIVERSITY MEETINGS

- Aug. 16—David Prescott Barrows, President of the University.
- Aug. 27—Ray Lyman Wilbur, President of Stanford University.
Mrs. Charlotte Hoffman Kellogg, member of the Commission for Relief in Belgium and of the American Relief Administration.
- Sept. 10—Jesse Desmaux Burks, Special Investigator on Educational Tests.
Saxton Temple Pope, Assistant Clinical Professor of Surgery.
Music: Miss Lillian Frater '22, pianist.
- Sept. 24—Discussion of Amendment 12, by students, alumni, faculty, and the president.
Music: R. O. T. C. Band.
- Oct. 8—Max Radin, Professor of Law.
C. A. Kofoed, Professor of Zoology.
Music: Miss Florence Briggs '21, 'cellist, and Miss Helen Saylor '21, accompanist.
- Oct. 22—Miss Martha A. Chickering '10.
- Nov. 5—Herbert Hoover.
- Nov. 19—(Football meeting) Coach Andy Smith, Graduate Manager Luther A. Nichols, Captain Cort Majors, Dean Frank H. Probert, and Herman H. Phleger '12.
- Jan. 14—David Prescott Barrows, President of the University.
- Jan. 28—John Adams Scott, Sather Professor of Classical Literature.
Charles E. Chapman, Associate Professor of Latin-American and California History.
- Feb. 11—Raymond Garfield Gettell, Professor of Political Science.
Henry Rand Hatfield, Professor of Accounting on the Flood Foundation and Dean of the Faculties.
- Mar. 11—Hon. H. W. Wright, Hon. Anna L. Saylor, Hon. A. A. Rosenshine, Hon. C. M. Kline, members of the Assembly of the California Legislature.
- Apr. 8—Brigadier-General Henry A. Greene, U. S. A., Retired.
David Prescott Barrows, President of the University.
Music: University of California Orchestra.
- Apr. 22—(Final meeting) Helen M. Allen, J. W. Cline, Jr., Paul L. Davies, J. E. Drew, O. C. Majors, Mary B. Martin, Minora E. McCabe, I. L. Neumiller, Gracella Rountree, A. B. Sprott, Jack Symes, W. A. White.

SECRETARY OF THE REGENTS AND COMPTROLLER

UNIVERSITY OF CALIFORNIA,
BERKELEY, July 1, 1921.

*To the Honorable Board of Regents
of the University of California.*

GENTLEMEN: I have the honor of presenting the following report of the Secretary and Comptroller for the year ending June 30, 1921, consisting of a roster of the Board and its committees; such items selected from the minutes of the Board as are considered to be of general interest, with the exception of gifts, which are listed in the report of the President of the University; and the financial statement of the University as approved by the auditors.

Respectfully submitted,

ROBERT G. SPROUL,
Secretary of the Regents, and Comptroller.

REGENTS OF THE UNIVERSITY, 1920-21

REGENTS EX OFFICIO

HIS EXCELLENCY WILLIAM DENNISON STEPHENS.....	Sacramento
<i>Governor and ex officio President of the Regents</i>	
CLEMENT CALHOUN YOUNG, B.L.....	276 Post Street, San Francisco
<i>Lieutenant Governor</i>	
HENRY W. WRIGHT.....	1009 Fair Oaks, South Pasadena
<i>Speaker of the Assembly</i>	
WILL C. WOOD.....	Sacramento
<i>State Superintendent of Public Instruction</i>	
GEORGE C. ROEDING.....	Holland Building, Fresno
<i>President of the State Agricultural Society</i>	
BYRON MAUZY.....	250 Stockton Street, San Francisco
<i>President of Mechanics' Institute</i>	
DAVID PRESCOTT BARROWS, Ph.D., LL.D.....	California Hall, Berkeley
<i>President of the University</i>	
WARREN GREGORY, A.B., LL.B.....	Merchants Exchange Bldg., San Francisco
<i>President of the Alumni Association</i>	

APPOINTED REGENTS

The term of the appointed Regents is sixteen years, and terms expire March 1 of the year indicated. The names are arranged in the order of original accession to the Board.

ARTHUR WILLIAM FOSTER, Esq.....	1932
226 Southern Pacific Building, San Francisco	
GARRETT WILLIAM McENERNEY, Esq.....	1936
2002 Hobart Building, San Francisco	
GUY CHAFFEE EARL, A.B.....	1934
14 Sansome Street, San Francisco	
CHARLES STETSON WHEELER, B.L.....	1928
Nevada Bank Building, San Francisco	
JOHN ALEXANDER BRITTON, Esq.....	1930
445 Sutter Street, San Francisco	
RUDOLPH JULIUS TAUSSIG, Esq.....	1932
1521 Van Ness Avenue, San Francisco	
WILLIAM HENRY CROCKER, Ph.B.....	1924
Crocker National Bank, San Francisco	
PHILIP ERNEST BOWLES, Ph.B.....	1922
American National Bank, San Francisco	
JAMES KENNEDY MOFFITT, B.S.....	1924
First National Bank, San Francisco	
REV. CHARLES ADOLPH RAMM, B.S., M.A., S.T.B.....	1928
1100 Franklin Street, San Francisco	
EDWARD AUGUSTUS DICKSON, B.L.....	1926
510 Lucerne Blvd., Los Angeles	
JAMES MILLS, Esq.....	1926
Hamilton City, California	

CHESTER HARVEY ROWELL, Ph.B.....	1936
Flood Building, San Francisco, California	
MORTIMER FLEISHHACKER, Esq.....	1934
Anglo-California Trust Company, San Francisco	
GEORGE I. COCHRAN, LL.D.....	1930
501 West Sixth Street, Los Angeles	
MRS. MARGARET SARTORI.....	1922
725 West Twenty-eighth Street, Los Angeles	

OFFICERS OF THE REGENTS

HIS EXCELLENCY WILLIAM DENNISON STEPHENS.....	Sacramento
President	
ROBERT G. SPROUL, B.S.....	220 California Hall, Berkeley
Comptroller, Secretary, and Land Agent	
MORTIMER FLEISHHACKER.....	Anglo-California Trust Company, San Francisco
Treasurer	
J. M. MANNON, JR., LL.B.....	Balfour Building, San Francisco
Counsel	

STANDING COMMITTEES OF THE REGENTS FOR 1920-21*

Agriculture: Regents Foster, Roeding, Dickson, Mills, Cochran, and Taussig.
Committee on Conference with Faculty: Regents Moffitt, Gregory, Taussig, Rowell and Ramm.

Endowments: Regents Crocker, Britton, Mrs. Sartori, Bowles, Cochran, McEnerney, and Fleishhacker.

Engineering: Regents Ramm, Fleishhacker, Britton, Roeding, and Bowles.

Executive: This committee consists of the chairmen of all the other committees, and the President of the Alumni Association.

Finance: Regents Earl, Foster, Britton, Moffitt, and Taussig.

Grounds and Buildings: Regents Britton, Wheeler, Bowles, Dickson, and Fleishhacker.

Jurisprudence: Regents McEnerney, Cochran, Wheeler, Gregory, and Young.

Letters and Science: Regents Rowell, Wheeler, Ramm, Wood, Gregory, and Mills.

Library, Research, and Publications: Regents Bowles, Moffitt, Gregory, Wood, Earl, Mauzy, and Rowell.

Lick Observatory: Regents Fleishhacker, McEnerney, Crocker, Mauzy, and Wright.

Medical Instruction and University Hospitals: Regents Crocker, Taussig, Britton, Earl, Moffitt, Ramm, Mrs. Sartori, and Bowles.

Southern Branch of the University of California and Scripps Institution for Biological Research: Regents Dickson, Cochran, Gregory, Mrs. Sartori, Wood, Rowell, and Taussig.

Wilmerding School: Regents Taussig, Earl, Moffitt, and Mauzy.

* The President of the Board of Regents and the President of the University are ex-officio members of all committees of the Board. In each committee the name of the chairman appears first and the name of the vice-chairman second.

SPECIAL COMMITTEE OF THE REGENTS DURING 1919-20*

Committee on Committees for 1921-22: Regents Earl, Moffitt, Dickson, Ramm, and Fleishhacker.

STANDING COMMITTEES OF THE REGENTS FOR 1921-22*

Agriculture: Regents Foster, Jastro, Dickson, Mills, Cochran, and Earl.

Committee on Conference with Faculty: Regents Moffitt, Gregory, Taussig, Rowell, and Ramm.

Committee on Educational Relations: Regents Wood, Dickson, Rowell, Ramm, and Earl.

Endowments: Regents Crocker, Britton, Mrs. Sartori, Bowles, Cochran, McEnerney, and Fleishhacker.

Engineering: Regents Ramm, Fleishhacker, Britton, Jastro, and Bowles.

Executive Committee: This committee consists of the chairmen of the other committees, and the President of the Alumni Association.

Finance: Regents Earl, Foster, Britton, Moffitt, Taussig, McEnerney, and Fleishhacker.†

Grounds and Buildings: Regents Britton, Wheeler, Bowles, Dickson, and Fleishhacker.

Jurisprudence: Regents McEnerney, Cochran, Wheeler, Gregory, and Young.

Letters and Science: Regents Rowell, Wheeler, Ramm, Wood, Gregory, and Mills.

Library, Research and Publications: Regents Bowles, Moffitt, Gregory, Wood, Mauzy, and Rowell.

Lick Observatory: Regents Fleishhacker, McEnerney, Young, Crocker, Mauzy, and Bowles.

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Wilmerding School: Regents Taussig, Earl, Moffitt, and Mauzy.

JULY, 1920

Sale of Hotel Rafael:

A contract of sale with Charles Jurgens and W. C. Jurgens for the Hotel Rafael property in San Rafael, Marin County, providing payment therefor in the sum of \$100,000, was approved. This property is an investment of trust funds.

Emma S. Davis Scholarship:

The sum of \$2000 was received for the establishment of the Mrs. Emma S. Davis, C.S.B. Scholarship for Women.

* The President of the Board of Regents and the President of the University are ex-officio members of all committees of the Board. In each committee the name of the chairman appears first and the name of the vice-chairman second.

† During the illness of Regent Taussig.

AUGUST, 1920

Agreement with National Cannery Association:

An agreement was approved with the National Cannery Association for the conduct of botulism investigations at the laboratory of the George Williams Hooper Foundation for Medical Research. Under this agreement the University received \$14,300 during the year.

Amendment to Declaration of Trust of Hooper Foundation:

The Regents arranged with Mrs. Hooper an amendment of the declaration of trust covering the George Williams Hooper Foundation for Medical Research, providing that the terms and conditions of the original trust may be modified by an agreement between five trustees of the Foundation and the Regents of the University, and giving to the Regents authority in their discretion to exchange any part of the property when such an exchange in their opinion will enhance the value of the total holdings or make them more readily salable.

Dividends from Ione Coal and Iron Company:

The Comptroller reported the receipt of \$6750 in dividends from the Ione Coal and Iron Company, a subsidiary company of the Pacific Improvement Company. The major portion of this is a distribution of assets and has been added to the Searles Fund.

Report on Kearney Vineyard:

A report was presented on the Kearney Vineyard for the year ending June 30, 1920, showing that this period had been one of the most successful in the history of the vineyard. Interesting items from the report are as follows:

Figs: For the past two years the Kearney Vineyard has netted from \$20,000 to \$25,000 each year from the two thousand fig trees which grow along the border of the property. The market for figs is not good this season and it is not likely that more than \$5000 net will be received.

Olives: The outbreak of olive poisoning has shattered the olive market and this, together with a light crop, will cut down earnings in this department by \$5000 or \$6000.

Cotton: The acreage of long staple cotton has been increased from sixty acres to one hundred and eighty acres and will mature December, 1920. It promises to be the best long staple crop, gauged on a per acre production, grown either in California or Arizona. A cotton gin, a storehouse for lint, and housing quarters for ten families to work on cotton picking are being constructed.

Hay, Grain, etc.: The usual productions in hay and grain have resulted in sufficient crops for the use of the vineyard and a margin of three hundred tons of hay and fifteen hundred bags of barley for sale.

Vineyards: The raisin crop is above the average and there are prospects of a good price. A new vineyard of forty acres will come into bearing this year and should add at least forty tons to the vineyard yield.

Production of Section Six: From the 160 acres devoted to reclamation from alkali, 120 tons of barley hay has been produced. The net value of this will give a net per acre return of \$12.00. The water table, which almost disappeared during the past year, has now returned and stands at an average level of five feet. An investigation is being made of the

problem of water seepage with the idea that eventually it may be more useful to prevent the seepage of water from irrigation canals into subsoil than to attempt to remove this water after it has percolated into the soil to the permanent detriment of the land.

Establishment of Infantry Unit, R. O. T. C., Southern Branch:

The President reported the receipt of notification from the Adjutant General of the Army of the approval of the application of the University of California for the establishment of an Infantry Unit, Senior Division, Reserve Officers' Training Corps, at the Southern Branch of the University, Los Angeles.

SEPTEMBER, 1920

Resignation, Dr. John Campbell Merriam:

The following letter was presented from Dr. John Campbell Merriam, resigning the positions of Professor of Palaeontology and Historical Geology and of Dean of the Faculties:

Berkeley, June 30, 1920.

"Dear President Barrows:

"It is with regret which I am unable to express adequately that I present to you my resignation as Professor of Palaeontology and Historical Geology and Dean of the Faculties of the University of California. As you are already aware, I have been elected to the presidency of the Carnegie Institution of Washington, and in spite of the close ties with California, it seems to me that the plan for life work which I have chosen clearly indicates that I should accept this field for work.

"It is more than thirty years since I deliberately chose the University of California as a place offering large opportunity in the special field of science to which I was devoted. Twenty-eight years of service on the University staff have not diminished my interest or enthusiasm for the work here. Having seen the development of the departments in which I am especially interested, and the growth of the University as a whole in this period, it would not be possible for me to conceive of myself as having any other than a deep and continuing interest in all phases of the University's work. I am therefore offering my resignation with a feeling that I am not to be considered as a less loyal or less distinctly interested Californian than in past years. I hope that my relation to the University may continue to give me opportunity to be of service.

"As has been suggested by you, I would be glad to retain such a relation to the Department of Palaeontology as will permit me to give the largest assistance in carrying on the plans for constructive work which we have developed in the course of the last twenty years. I would be glad to discuss this point more fully later. It seems to me now that the connection which would be most satisfactory would be expressed as an honorary curatorship of the palaeontological collections, without salary. This will enable me to help in the continuation of research work, without being related to academic policy.

"Assuring you of my continued devotion to the interests of the University and of my desire to support in every way possible your personal administration, I am, with best wishes,

"Faithfully yours,

"(Signed) JOHN C. MERRIAM."

Conference Committee with Faculty:

The President reported that at a meeting of the Academic Senate, the following members of the Senate were elected to represent the Senate as the members for the academic year 1920-21 at the Conference Committee, to be composed of representatives of the Regents and the Academic Senate respectively in accordance with the rules approved jointly by the Academic Senate and the Regents: Professors A. C. Lawson, C. G. Hyde, F. P. Gay, O. K. McMurray, and I. M. Linforth.

Death, E. L. Michael:

The President reported with regret the death on August 30, 1920, of Dr. E. L. Michael, Zoologist and Administrative Assistant in the Scripps Institution for Biological Research.

Easement and Right-of-way to City of San Diego:

The Regents approved the execution of an easement and right-of-way to the City of San Diego for water pipes across the property of the Scripps Institution for Biological Research.

Report from Committee on Library, Research and Publications:

The Chairman of the Committee on Library, Research and Publications, Regent Bowles, presented the following report on behalf of his committee:

Your Committee on Library, Research and Publications desires to express its great concern regarding the opportunities for constructive work in the University during the coming year. Due to the large deficit in the University budget made necessary by increases in the salary roll, it has been impossible to make adequate provision for the scholarly work of the institution. As the teaching and administrative duties of the faculty have been considerably increased within the last two years, there has been a natural tendency to shift emphasis from the normal balance between teaching and research to an adjustment in which the purely teaching function of the University comes to have relatively strong expression. The tendency to shift this emphasis taken with limitation of means of support make necessary an unusually large expenditure of interest and energy on the part of those who desire to initiate or conduct work in constructive scholarship. Assuming that the constructive work of the University is fundamental to the carrying out of our programme of teaching and public service, it seems clear that the University's position as an institution preëminent in scholarship is in grave danger.

For the coming year there is available a sum of only \$20,000 for publications as against \$20,000 plus \$12,444.81 for the year 1919-20 carried over from the Semi-Centennial Publications, and \$6008.33 carried over from publications budgets. The Publications Committee of the University, after careful study of the situation, has stated that for the present year the sum of \$61,000 is needed to print publications on hand and to care for the expected addition during the next twelve months. The \$20,000 now available for the Publications Committee, with the balance carried over from last year, is not sufficient to care for the manuscripts now on hand. It will be most discouraging to the members of the faculty to look forward to a year in which no scientific or scholarly articles can be accepted for publication until the budget for the following year has been considered and approved. We believe that for the coming year a fund of not less than \$15,000 should be secured to add to the \$20,000 now available in order to give outlet for publications which may be completed within the current year.

During the past year the Research Board of the Faculty canvassed the needs for support of investigations carried on by several departments

of the University, and discovered a need of more than \$50,000 for the conduct or initiation of investigations which would represent the best constructive work of the faculty. Last year it was possible to appropriate a fund of only \$4000 to meet the needs from various departments. For the year 1920-21, a similar sum of \$4000 has been approved for research. At the present time, and before the opening of the fall term, the Research Board has received requests for support amounting fully to twice the whole amount available for the coming year. A fund of \$50,000, such as was requested for last year, if made available to the departments of the University for research-assistance, travel, equipment and general expense in connection with scholarly work, would add immensely to the efficiency of the institution as an instrument for public service, and would contribute greatly to the effectiveness of the teaching staff. In the present critical situation of the University, we believe there is nothing that would do more to add to the strength of the institution than an increase of the present research fund of \$4000 to a sum of approximately \$25,000 for the coming year.

In certain departments of the University, the library is the laboratory. The funds available to the library during the past years have been limited and the opportunity for purchase of books has been restricted, due to war conditions. It is the belief of your committee that some addition should be made at once to the funds available for the library, especially for the purchase of books in departments which are using the library as a means of advancing knowledge for the benefit of this University and in the interests of the State. As items of library expense for which special request was made in the budget estimates of last year, but for which provision has not been made, we mention the request of the Department of History for \$20,000 and the desire of the Department of Education for a sum of \$5000 to establish a departmental library for research purposes. We believe that if possible \$5000 to \$10,000 should be added to funds available for library research purposes for 1920-21.

Plan of Operating University Hospital:

The Board voted that in order to maintain the place of the University Medical School as a first class teaching institution, the University Hospital should be operated during the year 1920-21 under a plan providing for 158 teaching beds, of which 126 on the average will be occupied continuously. This plan does not contemplate increasing the earnings of the Hospital either by building more private rooms or giving less satisfactory service to patients.

OCTOBER, 1920

Death, Miss Rachael Richardson:

The President reported with regret the death in Los Angeles, on May 23, 1920, of Miss Rachel Richardson, Instructor in Industrial Arts in the Southern Branch of the University.

Memorandum from President:

The President presented the following memorandum:

The Recorder's Office, under date of September 15, furnishes the following figures with respect to enrollment:

Number of students personally present in classes during the current fall semester, 9565. This gives an expected total enrollment for the current academic year, including students not registered the first semester, of about 10,500. The figure last year, 1919-20, corresponding to this was

9828. The above figure does not include students in the Summer Session, who numbered approximately 4700 in the two sessions of the summer, as against 3442 in the summer session of 1919. About one-third of the students in the summer session continue their work into the fall semester. In addition to the above figures, there are the University departments at San Francisco, Los Angeles, Mount Hamilton, La Jolla, Riverside, and Davis. Counting all degree giving departments of the University, and including the summer sessions, the total enrollment for the year 1919-20 was 13,954. The Recorder states: "We are not able as yet to give you the total enrollment for the current year, but it will certainly exceed last year's total by 3000. This total, I should add, does not include certain University activities not directed primarily toward the acquisition of University degrees, for example the normal curriculum in the Southern Branch at Los Angeles, the University Farm at Davis, the California School of Fine Arts, San Francisco, and the several departments of University Extension instruction."

I view centrifugal tendencies within the University with great concern. The University is a huge institution and its parts are widely distributed. Some of these parts can be built up at a distance from the center without impairment of power or additional expense. Other parts must be held closely within a single circle or they will grievously suffer from isolation or occasion the University a vast duplication of expenditures. This is particularly true of all those branches involving higher intellectual activity and discovery. Investigators are peculiarly dependent upon the stimulus and the knowledge of one another. There are probably few departments so distantly related as not to be essentially needful to one another and at all times contributive to one another's success. The departure of the medical departments from the University campus may be unavoidable, but the loss will be grievous and the subsequent expense through duplication very high. Still more grievous will be the separation of those men upon whom we must rely for building up of public health instruction, provided the Public Health School, when established, follows the Medical School. There is, furthermore, an active movement under way to remove the agricultural college from Berkeley. Friends of the University interested in agriculture in the Sacramento Valley desire to see it located at Davis. Members of our own faculty of the Department of Agriculture feel that the need of ample lands for agricultural experiment recommend a removal to some less populous region. These are grave questions, and they will deeply affect the future of the University and that discovery which the University promotes. It is our ambition to make the University departments located together on the Berkeley campus one of the great centers of scientific and philosophic discovery. We can have no less ambition. With the work which has in recent years been done such is not only practical but should be within approximate attainment. Here in the next few years should assemble one of the greatest companies of scholars with library facilities, laboratories, and means to promote the advancement of knowledge. There will be power in such a unity of forces. Any institution seeking comparable results that is removed from immediate association with this great center of power will suffer, and suffer forever. It is difficult to evaluate the loss because it is a spiritual element, but no one in touch with it can doubt its actuality. I consider that no graver responsibility faces the Regents at the present time than to provide those great resources and facilities which the advancing departments of our institution require, and at the same time keep the University in the embrace of a single bond and a single fellowship.

Use of Haviland Bequest:

The Regents voted to devote the bequest of Hannah N. Haviland for a building on the campus of the University at Berkeley, amounting to approximately \$250,000, to the erection of an office and class room building for the School of Education.

Award of Contract for Grading of Northwest Corner of Campus:

The contract for grading the northwest corner of the campus was awarded to Alfred H. Vogt, the low bidder, for the sum of \$54,720.

Appointment of Comptroller:

Robert G. Sproul, an Alumnus of the class of 1913, was appointed Comptroller, Secretary and Land Agent of the University, effective October 1, 1920.

Intersession:

The Regents voted that the Intersession, which proved to be a successful experiment during the past summer, be repeated the coming summer, and that the Dean of the Summer Session be authorized to take the necessary steps to conduct it on the same financial plan as last year. The Intersession runs from approximately May 9 to June 18, filling the time between the regular session and the Summer Session.

Coöperative Agreement Between U. S. Bureau of Mines and University:

The Regents approved an agreement with the United States Bureau of Mines under which the Bureau agrees to maintain an experiment station in quarters furnished by the University in the Hearst Memorial Mining Building and during the fiscal year ending June 30, 1921, to expend approximately \$14,000 for salaries, equipment, supplies and other expenses of Bureau employees. The Bureau also maintains a Mine Safety Station and a special Mine Rescue truck and for this purpose will expend during the same period approximately \$20,000. The purpose of the University in granting quarters to this Bureau, and of the Bureau in locating this work on the campus is to facilitate joint investigations of problems affecting the mining industry of the State of California.

Deed to Land Adjacent to Gage Canal:

The Secretary reported the receipt of a deed transferring to the Regents a narrow strip of land lying along and adjacent to the Gage Canal, which runs through the property of the Citrus Experiment Station at Riverside. This land was transferred to Harvey O. Reed by the Gage Canal Company through an error and Mr. Reed has deeded it to the Regents to correct the record.

Auditors' Report on Outlying Stations of University:

The Auditors presented through the Finance Committee the following statement in connection with the accounts of the outlying stations of the University:

“San Francisco, September 20, 1920.

“Finance Committee, Board of Regents,

“University of California, Berkeley, California.

Dear Sirs: In the course of our audit of the University accounts we have visited the outlying stations and submit the following report

on conditions existing at the University Hospital and the Davis Farm. In both these departments, more or less elaborate sets of books are kept which furnish the administrative heads with information which they might require from time to time. These systems have never been in any sense an integral part of the University accounting system, and attempts made to reconcile the accounts with the department accounts kept on the University books have been unsuccessful.

"This condition of affairs, in our opinion, should be remedied at once, even though it entails an addition to your present accounting staff. If this is done, reports can be prepared at any time, showing itemized receipts and disbursements which will furnish valuable data. At present, any figures submitted of this nature do not reconcile with the University books.

"We also strongly recommend that the office employees in each of these departments be directly responsible to the Comptroller. This procedure places all the various accounting departments under one head and will thereby increase the efficiency of the University accounting department and eliminate friction; and also by having an individual directly responsible to the Comptroller on the ground, to verify or approve all orders, the Comptroller will be able to keep in closer touch with operations in which he is vitally interested.

"We have had these recommendations in mind for some considerable period, but did not deem it advisable to make them before, owing to war conditions, shortage of help, etc., but consider that University affairs have grown so large that these matters should be given attention without further delay.

"Yours very truly,

"(Signed) McLAREN, GOODE & Co."

Raisin Crop at Kearney Vineyard:

A report was presented to the effect that the raisin crop for the year 1920 of Kearney Vineyard was entirely under cover on September 30, five days earlier than in any year heretofore, and that there had been no loss from rain damage. The crop is approximately 700 tons, valued at \$300 a ton.

Teachers' College in Southern Branch:

In response to a request for information from the President of the Board of Education and the Superintendent of Schools of the City of Los Angeles, the Regents expressed their intention to develop a Teachers' College in the Southern Branch, providing the highest grade of instruction for elementary teachers and teachers requiring special preparation for special branches.

Appointment, Wigginton E. Creed:

At the request of Mrs. Hooper, and with the hearty concurrence of the Regents, it was voted to recommend to the Board of Trustees of the Hooper Foundation that Mr. Wigginton E. Creed be added to the membership of that Board.

NOVEMBER, 1920

Future Policy of Medical School:

The following program proposed by President Barrows was accepted as the basis of the future policy of the University of California as to medical instruction:

(1) That there should be an early consolidation of the pre-clinical and clinical departments of the Medical School so that the instruction of all four years may be given in one place to a united student body by a united faculty, it being understood that this will require the erection of a science building at a cost of from a million to a million and a half dollars to house the offices, recitation rooms, and laboratories of the departments of Anatomy, Physiology, Biochemistry, Pharmacology, Pathology, Bacteriology, Gynecology and Obstetrics, and Pediatrics.

(2) That beginning with another fiscal year, two full time professorships should be added to the medical faculty; namely, a Professorship of Medicine and a Professorship of Surgery, such Professorships to pay the maximum salary allotted to a professorship in any branch of the University, provided appointees are found who possess attainments equalling those of the highest in the University. Also the appointment of several subordinate full time teaching positions and a considerable number of unpaid or partly paid professorial positions held by practitioners of medicine, such additional appointments to be in association with the two new professorships.

(3) That the full time professorships named in (2) and all other full time professorships in the Medical School, be interpreted as permitting limited opportunities for private practice within the hospital only, these limited opportunities to be furnished by a few private beds at the disposal of each professor.

Appointment, C. L. Cory:

Professor C. L. Cory was named Acting Dean of the Faculties for the period of the President's absence from the University in the month of November, 1920.

Boomerang Scholarship Fund:

The President reported the establishment of a scholarship fund to be known as the Boomerang Scholarship Fund for four years at \$125 a year for the benefit of men or women undergraduate students.

Salary Scale, Intersession and Summer Session:

The following salary scale was adopted for the Intersession and Summer Session in Berkeley: Professors, \$400.00; Associate Professors, \$350.00; Assistant Professors, \$300.00; Instructors, \$250.00.

Change in Orders of the Board:

The following change in the orders of the Board was unanimously approved:

That Sections 1, 3 and 5 now reading as follows:

1. The regular officers of the Board shall consist of a President, who is the Governor of the State, as provided by law, a Secretary, a Treasurer, a Comptroller, a Land Agent, and an Attorney. The offices of Comptroller, Secretary and Land Agent may be held by the same person.

3. It shall be the duty of the President of the Board to preside at its meetings. In case of his absence, or of his inability to act, his place may be supplied, pro tempore, for that meeting, by any member of the Board who may be chosen for that purpose by a majority vote of all the members present.

5. The Secretary, Treasurer, Comptroller, Land Agent and Attorney shall be elected by the Board and shall hold office during the pleasure of the Board. The Comptroller, Secretary, Land Agent and Treasurer shall give bonds for such amounts and in such form as the Board shall prescribe.

be amended to read as follows:

1. The regular officers of the Board shall consist of a President, who is the Governor of the State, as provided by law, a Chairman, a Secretary, a Treasurer, a Comptroller, a Land Agent, and an Attorney. The offices of Comptroller, Secretary and Land Agent may be held by the same person.

3. It shall be the duty of the President of the Board to preside at its meetings. It shall be the duty of the Chairman to preside in place of the President in case of his absence or his inability to act. In case of the absence of both or of their inability to act, the place may be supplied pro tempore for that meeting by any member of the Board who may be chosen for that purpose by a majority vote of all the members present.

5. The Secretary, Treasurer, Comptroller, Land Agent and Attorney shall be elected by the Board and shall hold office during the pleasure of the Board. The Chairman of the Board shall be elected annually by a majority vote of all the members present.

Under this amendment, Regent Earl, who was not present and had requested that his name be not considered, was unanimously elected Chairman of the Board.

DECEMBER, 1920

Appointment of Dean Hatfield as Dean of the Faculties:

The President reported the resignation of Professor H. R. Hatfield as Dean of the College of Commerce, and his appointment as Dean of the Faculties for the period ending June 30, 1921. Professor Stuart Daggett was appointed Dean of the College of Commerce.

Matriculation and Degree Requirements of College of Letters and Science:

The Regents approved the following action of the Academic Senate concerning matriculation and degree requirements of the College of Letters and Science:

Upper Division Requirements:

1. That the rule which now reads "Among the 124 units required for the degree of Bachelor of Arts, 36 units must be done in major courses in any of the following departments:... Ordinarily these 36 units of major work must be completed during the junior and senior years" be amended by striking out the word "ordinarily."

2. That the rule as amended apply to all students who are candidates for degrees to be conferred in May, 1921, or later.

Elementary Algebra and Plane Geometry:

3. That elementary algebra and plane geometry, which are given this term for students who did not present these subjects for matriculation, be given until further notice.

4. That credit toward the A. B. degree for elementary algebra or plane geometry at the rate of three units for each subject, be given only to students who complete the courses as part of their regular work in residence at the University.

The Junior Certificate:

5. That students who had completed 13 to 30 units in August, 1920, be released from all junior certificate requirements, and that no "transition" group be recognized. All students to whom the complete new junior certificate requirements are not applicable will proceed to their degrees under the old rules.

The Major for A. B.:

6. Candidates for the A. B. degree to be granted in or after May, 1923, must complete a major of 24 units. A major consists of a substantial group of coördinated upper division courses taken under the advice of the department of the student's choice. Some of the 24 units may be in related subjects in other departments. Before the degree is granted, the major department must certify that the student has completed its requirements for the major.

7. Requirements for the majors, including prerequisites and limitations on programs, and alternative electives, shall be submitted by the departments to the Executive Committee of the College of Letters and Science for approval, before publication and before they become effective.

8. Group majors may be set up by conference between two or more departments, subject to the approval of the Executive Committee.

9. Candidates for the A. B. degree to be granted in May or December, 1922, who elect to graduate with the 12-unit minimum instead of a major, shall have the selection of courses in the department of their choice approved by that department.

Death, Frank B. Rosson:

The President reported with regret the death, in Los Angeles on December 2, 1920, of Frank B. Rosson, Instructor in Pathology.

Alameda Marsh Lands:

On recommendation of the Finance Committee, the Regents approved the acceptance from the Pacific Improvement Company, in liquidation, of the Alameda marsh lands of the company at a valuation of \$250,000.

Lease, M. A. Ley:

A lease to Mr. M. A. Ley on 240 acres in the County of Fresno for the period of two years from January 1, 1921, at an annual rental of \$125 per year was approved.

Thorndike Intelligence Tests:

An appropriation was made for the conduct of Thorndike intelligence tests on three thousand new students admitted to the University during the semester.

Air Service Unit R. O. T. C.:

The President reported the approval by the Secretary of War of the establishment and maintenance of an Air Service Unit of the Reserve Officers Training Corps, Senior Division, at the University of California.

Allocation of Searles Fund:

It was voted that the income of the Searles Fund should be allotted during the year to the budgets of Publications, Research and Library in the ratio of six, four and two.

JANUARY, 1921**Appointment of University Examiner:**

The President reported the resignation of B. M. Woods as University Examiner, effective December 31, 1920, and the appointment of Dr. R. S. Minor, Professor of Physics, to the position from January 1st, 1921.

Resolution Regarding Agricultural College:

The following resolution was adopted:

“The Regents of the University of California declare it to be the policy of the University to center, as far as practicable, all higher instruction and research in Agriculture at Berkeley and, with the exception of the College of Agriculture at Berkeley, to confine agricultural instruction to Freshman and Sophomore years, which latter instruction the Regents are prepared to undertake at other places than at Berkeley, and especially at the Davis Farm School.”

FEBRUARY, 1921**February Meeting in Los Angeles:**

In accordance with the regular custom, the February meeting of the Regents was held in Los Angeles.

Conditions at the Southern Branch:

The President presented the following report on conditions at the Southern Branch:

I consider this meeting appropriate to present certain data in connection with the Southern Branch of the University which have been summarized by Professor Monroe E. Deutsch, a member of the Advisory Administrative Board. The University has had control of this institution for a year and a half, but actually little change could be undertaken until the present fiscal year 1920-21. The original appropriation for this biennium was \$468,000. To this was added the sum of \$41,000 for junior college work. To this sum the Regents appropriated in the current budget an addition of \$100,000. In the first year of the University's control, 1919-20, student attendance comprised a freshman class of 250, a teachers' course of 1000. For the current year, 1920-21, the attendance has been thus distributed: freshman class, 600; sophomore class, 300; teachers' course, 1000; other students, including Federal Board students, 400; total, 2300. For the fiscal year

1921-22 the Director recommends a provisional distribution of attendance as follows: Junior College, 1200; teachers' courses, 1200; other teacher candidates, 200; total, 2600. This, in addition to approximately 400 Federal Board students, would give a total of 3000, the maximum capacity of the present plan. The faculty at present is as follows: original members—66, of whom 20 are teachers in the Training School; additions since the University assumed charge—25; needed additions—35. The academic attainments of the faculty have been appreciably raised by the period of University control. Nineteen members of the present faculty have the degree of Doctor of Philosophy, and in a number of other cases it can be correctly said that the instructors have a fair equivalent. The following departments have been added: Political Science, Classical Languages, Physics, Physical Education for Men, and Military Science. New instruction has also been developed in Botany and Geology. Students in the Junior College are expected to meet the Junior Certificate requirements of the University, or such other requirements as may be set up by the Academic Senate and the Board of Regents. The intent is that the work of these two years shall be closely coördinated with the upper division work of the University and allow the passage of the students from the Southern Branch to Berkeley. The teachers' curriculum, which prepares in two years for the elementary teacher's certificate, at present includes, out of a total of 72 units, 16 of genuine college work. In addition, there are 14½ units of electives which may be chosen from collegiate courses. In other words, it is possible for a student taking the two years course for the elementary certificate to include 30 units of college work acceptable by the University for a higher degree. These units may be chosen out of a total number of 489 units in 29 departments. From the standpoint of the University, the Southern Branch is offering junior college work superior to that given in other junior colleges of the State. The faculty is stronger, the opportunity greater, the atmosphere more that of an institution of higher learning. The teachers' course has also benefited greatly by coming under the University. The faculty has been strengthened and the curriculum enlarged. The Director reports that the corps of teacher candidates is being recruited by desirable women and by a number of men from the Junior College, this movement supporting the hope that the teacher's course may profit by desirable recruits if its work is conducted in association with a collegiate student body.

I look forward to the progress of the teachers' course at the Southern Branch to a point where students who complete the two years of work necessary for a teacher's certificate will at the same time be eligible, through the completion of a sufficient amount of lower division work, for direct transfer to the upper division of the University. This can only be done by a further enriching of the teachers' curriculum, and perhaps also by a change in the theory of training. I believe the process of making a satisfactory teacher consists first in enriching the knowledge of the candidate in the same manner as a student in any field of higher studies. In addition, such students must be taught and practiced in the art of simplifying or "elementalizing" their knowledge so that it becomes understandable and persuasive to students of varying ages and degrees of comprehension. The task of training students in this process of elementalizing their knowledge is the appropriate work of professors of elementary and secondary education. The mistake made by many normal schools and teachers' colleges is, that

instead of building up the knowledge of the teacher candidate and requiring him or her to make his own simplifications, the college itself performs these simplifications for the teacher candidate and teaches them in place of discipline that develops the teacher candidate's own knowledge. It is this false policy, as it seems to me, which vitiates so much of normal school work and which has found its way into the teachers' colleges of university institutions. It is not a diluted or elementalized knowledge that a teacher candidate requires, but genuine and thorough knowledge, together with training in the art of simplifying this knowledge and presenting it. I think if the University of California through its Department of Education and the Southern Branch of the University can develop a plan of teacher training that is sound from a University standpoint, it may put this class of professional preparation upon a somewhat new and more acceptable plane.

The Director of the Southern Branch recommends that authorization be given by the Regents to inaugurate a third year of instruction in the teachers' course in the next academic year 1921-22, and a fourth year of teacher training instruction in the year 1922-23. I recommend this action, although I believe that the preferable plan for students in the teachers' course who complete the second year and desire further instruction is for these students to take this higher instruction at Berkeley, provided they can be fitted by the instruction of the first two years to enter upon upper division courses. My belief is that the preference itself of students will eventually decide this matter, but I recommend that the organization of instruction be authorized at Los Angeles, and the experiment of giving it be conscientiously made.

Auditors' Report on Kearney Vineyard:

The Comptroller reported the receipt of a statement from the Auditors certifying to the correctness of the accounts of the Kearney Vineyard for six months ending December 31, 1920.

Lease With Reinhart Lumber and Planing Mill Company:

Approval was given to the extension for the term of one year of the lease between the Regents and the Reinhart Planing Mill Company, covering property at Seventeenth and Kansas streets, San Francisco, which expired February 28, 1921.

MARCH, 1921

H. A. Jastro, Ex-officio Regent:

Mr. H. A. Jastro of Bakersfield, who is President of the State Board of Agriculture, thereby becoming ex-officio Regent of the University, presented his Commission and was welcomed by the Board.

Death, Frances M. Greene:

The President reported with regret the death of Dr. Frances M. Greene, Supervisor of Practice Work in the Department of Economics, on February 8, 1921.

Speaker for Charter Day:

An announcement was made that the Honorable Frank Orren Lowden, former Governor of the State of Illinois, would be the Charter Day speaker for 1921.

Weinstock Lecturer:

The President reported the acceptance by Mr. Wigginton E. Creed of the invitation to deliver the Barbara Weinstock lecture on the Morals of Trade for 1921.

Medical Corps Unit of R. O. T. C.:

Approval was received from the Secretary of War for the establishment and maintenance of a Medical Corps Unit of the Reserve Officers' Training Corps.

Salary of Persons on Sabbatical Leave of Absence:

It was voted that hereafter the amount of salary to be paid persons on Sabbatical leave of absence be on the basis of two-thirds of the salary during the year for which the leave is taken rather than two-thirds of the salary of the preceding year.

Lease, Ernest F. Shuey:

A lease of certain lands in the Counties of San Luis Obispo and Monterey with Ernest F. Shuey was approved for a term of three years, at a rental of 65 cents per acre.

Contract With California Associated Raisin Company:

The President and Secretary were authorized to enter into a contract with the California Associated Raisin Company covering the raisin planted area of the Kearney Vineyard during the years 1921-35 inclusive.

Base Hospital Scholarship:

It was voted that the income of the Base Hospital No. 30 Endowment Fund be devoted for the year 1921-22 to a scholarship in the Medical School.

J. W. Gilmore Chilean Exchange Professor:

The President reported that J. W. Gilmore, Professor of Agronomy in the Department of Agriculture, had been named Chilean Exchange Professor for the year 1921, and that Professor Galvez, head of the Department of English in the University of Chile, had been appointed by the Chilean Government to spend the next year at the University of California.

Support of Research Activities by Miss Annie M. Alexander:

The following communication was presented from Miss Annie M. Alexander concerning her support of the research activities in the Department of Palaeontology:

"The agreement with the University of California, as set forth in my letter to President Wheeler, dated December 8, 1915, in accordance with which I have supported the research work in Palaeontology since January, 1916, terminated with the end of December, 1920. It is my desire to continue the support of research work in Palaeontology for the period of five years beginning July 1, 1921, and I therefore make the University of California the following offer:

"I will arrange to send to the University of California the sum of \$675 (six hundred and seventy-five dollars) the first of each month

for the next five years, beginning July 1, 1921, the sums thus forwarded to be held by the University as a fund for investigation in Palaeontology and Historical Geology.

“(1) The fund shall be expended under the direction of Professor B. L. Clark, Director of the Museum of Palaeontology.

“(2) The Museum of Palaeontology shall be recognized as a separate department, the purpose of which is the carrying on of research work in Palaeontology and Historical Geology.

“(3) The sum appropriated yearly for the needs (equipment and running expenses) of the Museum of Palaeontology shall not be less than \$600. It shall be understood that in general the equipment and running expenses of the Museum shall be paid out of the Museum budget.

“(4) Vertebrate collections of the Museum shall be in the charge of an assistant whose title shall be Curator of Vertebrate Palaeontology and whose salary shall not be less than \$2400 per year. It is recommended that Mr. Eustace Furlong, now assistant to the Palaeontology department, be given this position.

“(5) The University shall appropriate the sum of \$1200 per year to be applied on the salary of a research assistant or assistants for Professor Bruce L. Clark.

“I am very much in hopes that the University will be able to make the alterations in Bacon Hall, such as have been recommended to the President by Professor Clark. Unless these changes can be made the work in the Museum will be greatly handicapped.”

Location of Student Union:

The Regents approved the location of the Henry Morse Stephens Memorial Hall at the west end of the Faculty Glade and on a line with the Sather Tower, and voted that the funds raised from the various sources for the erection of the building be accepted on the condition that the building is to become the property of the Regents in the same sense as any other building on the campus, but that its administration is to be a matter to be handled jointly by the Regents, the Student Body and the Alumni.

Memorial Stadium:

The Regents offered their coöperation to the Associated Students in the drive for \$1,000,000 for the erection of a California Memorial Stadium, which is now being planned.

Sites for Abraham Lincoln Bust and Senior Bench:

It was voted that the Gutzon Borglum bust of Abraham Lincoln be set just south of the Campanile, and that the Senior Bench be located at the intersection of the center path with the drive between North and South Halls.

APRIL, 1921

Resignation, Dr. G. H. Whipple:

The following letter of resignation was received from Dr. George H. Whipple, Professor of Research Medicine, Director of the George Williams Hooper Foundation for Medical Research, and Dean of the Medical School:

“After careful consideration of the offer made me by the Trustees of Rochester University, I have decided to accept. I therefore submit my resignation through you to the Trustees of the Hooper Foundation and the Regents of the University of California. It seems to me that my resignation should take effect on June 30, 1921, at the end of our school and fiscal year.

“You are aware of the fact, I am sure, that this decision has been made with sincere regret. My work here has been carried forward with the finest support on the part of trustees, regents and faculty alike and my interest in this institution and this University can never fail. At this time, I think it highly appropriate to add a word as to the loyalty and splendid support given me by the individuals of this laboratory staff. Their work and investigative ability command the respect of their colleagues here and elsewhere. For this reason, I think the development of this department is sound and feel confident that the Hooper Foundation will continue to develop and enlarge its fields of service.

“Finally, I wish I could find the words to express to you and the Trustees of the Hooper Foundation my sincere appreciation of the many years of friendly coöperation which I have enjoyed.”

Death, Kate F. Osgood:

The President reported with regret the death of Miss Kate F. Osgood, Assistant Supervisor of Practice Teaching in the Training School of the Southern Branch, on April 8, 1921.

\$50 Trust:

It was voted to accept the terms of a trust whereby there is deposited with the Union Trust Company of San Francisco the sum of \$50, to remain at interest until the year 2257, at which time the income on the accumulated sum is to be used for the maintenance of the University.

Directorship of University Hospital:

The President reported the resignation of Dr. W. E. Musgrave as Director of the University Hospital, effective June 1, 1921, and recommended the appointment of Dr. W. C. Rappleye as Acting Director for the balance of the fiscal year.

MAY, 1921

Death, Dr. William B. Lewitt:

The President reported with regret the death in San Francisco on April 25, 1921, of Dr. William B. Lewitt, Professor of Pediatrics, Emeritus.

Award of University Medal:

The President reported the award of the University Medal for 1921 to Miss Georgea Tilton Hine of Berkeley, candidate for the degree of Bachelor of Arts in the College of Letters and Science, and honorable mention of Miss Metta Clare Green of Berkeley, candidate for the degree of Bachelor of Arts in the College of Letters and Science.

Budget 1921-1922:

The following budget was adopted for the year 1921-1922:

INCOME**Schedule I—Income for support and maintenance of academic work:**

Endowments	\$299,223.00	
United States	198,668.00	
State Appropriations	4,015,694.00	
Students' Fees and Deposits	424,250.00	
Professional College Receipts	646,000.00	
Agricultural Sales Funds	318,480.00	
Southern Branch Fees, etc.	114,500.00	
Sales of Publications	6,000.00	
Donations	68,252.00	
Anticipated Contributions for University Hospitals	110,628.00*	
Miscellaneous	23,540.00	
		<hr/> \$6,225,235.00
Schedule II—Income for Specific Purposes		1,212,385.00
Schedule III—Income on Special Funds held for Specific Purposes		28,975.00
		<hr/> \$7,350,967.00

* Any part of these contributions not received will constitute a deficit.

BUDGETS**Schedule I—Support and maintenance of Academic work:**

Salary Budgets	\$2,526,136.56	
Maintenance Budgets	3,382,882.69	
Miscellaneous Provisions	316,215.75	
		<hr/> \$6,225,235.00
Schedule II—Provision for Special Purposes as per "Income"		1,212,385.00
Schedule III—Provision for Special Funds held for Specific Purposes as per "Income"		28,975.00
		<hr/> \$7,350,967.00

Nine Months Basis for Certain Members in College of Agriculture:

The President was empowered to make arrangements for the employment of certain members of the College of Agriculture on the basis of nine months service per year instead of eleven months, such arrangement to include a proper decrease in compensation.

Elsie Leslie Scholarship Fund:

It was voted that the sum of \$7768.28, received from the estate of George Darby Leslie for a perpetual scholarship endowment fund, be included in the general endowment pool under the name of "The Elsie Leslie Scholarship Fund," and that the income be applied to the maintenance at the University of a scholarship to be known, in accordance with the terms of the will, as the "Elsie Leslie Scholarship for Widows' Sons," the holder of such scholarship to be a student in need of assistance and worthy of such assistance, and preferment in his selection to be given to the son of a mother who has lost her husband by death.

Gas Mains on University Farm Property:

A permit was granted to the Pacific Gas and Electric Company for a revocable right-of-way to put down 200 feet of high pressure gas mains on the property of the University Farm at Davis.

Contract for Excavation for Student Union:

The contract for the excavation and grading for the Student Union Building was awarded to the Carlin Grading Company for the sum of \$8795.

Rowell-Chandler Loan:

The loan of \$70,000 to the Rowell-Chandler Company of Fresno was renewed for a period of three years at seven per cent per annum, with permission to pay \$10,000 on the principal at any interest paying date.

Women's Faculty Club:

A site near the Men's Faculty Club, where the Infirmary Annex (old Music Building) is located, was allotted as a site for the Women's Faculty Club, subject to the possibility of making arrangements for the clearing of the site at the time it is needed.

JUNE, 1921

Acting Dean, Los Angeles Medical School:

The President announced the appointment of Edgar A. Shumaker as Acting Dean of the Los Angeles Medical School during the absence of George H. Kress for the period July 1 to December 31, 1921.

Proceeds From Sale of Santa Monica Forestry Station:

It was voted that the amount derived from the sale of the Santa Monica Forestry Station, authorized by the Legislature of 1921, be set up as an endowment fund, the income to be used for research in the Division of Forestry of the College of Agriculture.

Lease, Frank Carson:

Approval was given to the execution of a lease from the Regents to Frank Carson on the following described lands in Kern County for the term of one year, from November 1, 1920, with an option of renewal for the same period at an annual rental of \$140:

The South Half of the North Half, the North Half of the Southeast Quarter, and the Southeast Quarter of the Southeast Quarter, of Section 3, Township 25, South, Range 18 East, M. D. B. & M.

Investment of Part of Searles Fund:

It was voted to invest \$200,000 of the Searles Fund in Certificates of Indebtedness of the United States Government.

Auditor's Report:

The Comptroller reported the receipt of the audit of the accounts of the University for the quarter ending December 31, 1920, including a certification as to their correctness.

Memorial Field:

It was voted that the field on the northwest corner of the campus, the grading of which has just been completed, be known as Memorial Field.

Building Agent for Henry Morse Stephens Hall:

A contract was entered into with Mr. P. J. Walker to act as University Building Agent for the construction of Henry Morse Stephens Hall, in accordance with the approved plans of the Supervising Architect, the maximum outside cost to be first approved by the Regents; Mr. Walker to receive 5 per cent of the actual cost of the building, provided such actual cost does not exceed the approved estimated cost; if the actual cost should exceed the estimated cost, such excess to be deducted from an amount equal to five per cent on the estimated approved cost.

Stadium Site:

The following resolution was adopted in connection with a site for the California Memorial Stadium:

WHEREAS, the grounds of the University of California at Berkeley have become, and now are, inadequate for its requirements;

NOW, THEREFORE, BE IT RESOLVED, by the Regents of the University of California that public interest and necessity require that all that real property situate between the west line of Chapel street and the east line of Fulton street, and between the north line of Bancroft way and the north line of Allston way, in the City of Berkeley, County of Alameda, State of California, and every interest therein, be acquired for the use of said the University of California as a part of the grounds thereof; and,

BE IT FURTHER RESOLVED, that the Regents of the University of California acquire said real property and every interest therein for the use of said the University of California as a part of the grounds thereof, by proceedings in eminent domain, in accordance with the provisions of Title VII, Part III of the Code of Civil Procedure of the State of California:

BE IT FURTHER RESOLVED, that the attorney for said the Regents of the University of California be and he is hereby authorized, empowered and directed to institute and prosecute to completion proceedings under Title VII, Part III of the Code of Civil Procedure of the State of California to condemn the said real property and every part thereof, and every interest therein, for the public use hereinabove set forth.

Alumni of Southern Branch Members of Alumni Association:

Regent Gregory reported that as President of the California Alumni Association, he had ruled that the graduates of the Southern Branch were eligible to membership in that Association.

AUDITOR'S CERTIFICATE

To the Finance Committee of the

Board of Regents of the University of California.

DEAR SIRs: The books and accounts of the University of California have been audited for the year ended June 30, 1921, and we certify that the Balance Sheet of June 30, 1921, the statement of Income and Expenditures for the year ended June 30, 1921, and the accompanying schedules are in accordance therewith, and, in our opinion, correctly exhibit the financial condition of the University.

The investment securities have all been examined, and agree with the records.

The income from the Trust Funds has been expended in accordance with the specified conditions of the various trusts.

MCLAREN, GOODE & Co.,

Certified Public Accountants.

SAN FRANCISCO, CAL.,

January 7, 1922.

BALANCE SHEET

ASSETS

Schedules

Real Estate and Improvements:		
"A"	Real Estate in Berkeley.....	\$1,604,822.44
"B"	Buildings and Improvements in Berkeley.....	5,804,725.09
"C"	Real Estate and Improvements not in Berkeley.....	4,152,094.46
		<hr/>
		11,561,641.99
Equipment:		
	General.....	3,272,099.06
	Bancroft Library.....	250,005.00
		<hr/>
		3,522,104.06
Investments:		
"D"	Notes Receivable.....	429,089.90
"E"	Bonds.....	1,668,369.40
"F"	Stocks.....	358,254.50
"G"	Real Estate held as Investments.....	4,130,969.94
"H"	Miscellaneous Loans and Contracts.....	908,791.42
		<hr/>
		7,495,475.16
	Suspense Account—Montgomery Avenue Bonds.....	21,999.00
		<hr/>
		7,517,474.16
Stephens Memorial Account:		
	United States Liberty and Victory Loan Bonds.....	11,200.00
	Treasurer—Special Deposit Account.....	136,508.36
		<hr/>
		147,708.36
Real Estate Acquired in Lieu of Cash:		
(See Schedule "C")		
	Hyde Street Property—San Francisco.....	30,000.00
	Potrero Avenue Lots—San Francisco.....	8,250.00
		<hr/>
		38,250.00
Inventories—Stores on Hand:		
	Storehouse—Berkeley.....	18,420.14
	University Hospital Stores.....	50,226.10
	University Farm Stores.....	10,098.17
		<hr/>
		78,744.41
"I"	Departmental and Other Expenditures carried forward....	230,031.43
"J"	Amounts due from State of California under various appropriations.....	233,291.49
"K"	Accounts Receivable.....	499,556.94
"L"	Cash on hand.....	300,266.63
	Revenue Account—Deficit.....	254,947.74
		<hr/>
		<hr/>
		\$24,384,017.21

JUNE 30, 1921

LIABILITIES

Schedules

"M" University of California—Surplus Invested in Fixed Assets.....	\$15,083,746.05
"N" Endowment Funds.....	8,076,640.80
"O" Fund Income Accounts—Unexpended Balances.....	104,819.71
"P" Donation Accounts—Unexpended Balances.....	591,240.32
"Q" Balances on Hand—To be used for Specific Purposes.....	162,058.20
"R" Sundry Creditors.....	345,637.66
Permanent Building Fund.....	19,874.47

\$24,384,017.21

[Schedule ‘‘A’’]

REAL ESTATE IN BERKELEY

University Campus Site	\$1,000,000.00
Hearst Hall and Hearst Cottage Site	7,000.00
Hillegass Tract Site	194,991.04
Palmer House Site	17,500.00
Oxford, Center, Addison Streets and University Avenue (part of total valuation of \$133,405.68—see Schedule ‘‘G’’)	50,000.00
Barrows Street Property	63,450.00
Sylvan Way and College Avenue Building and Lands	31,924.58
Sylvan Way Property	15,395.00
Telegraph Avenue and Allston Way Property	56,105.21
Watershed Lands	168,456.61
	<u>\$1,604,822.44</u>

[Schedule "B"]

BUILDINGS AND IMPROVEMENTS IN BERKELEY

Acid House	\$480.00
Agriculture—Forestry Division Portable House	1,237.76
Agriculture Hall	212,883.85
Anatomical Laboratory	9,330.90
Architectural Building	23,377.53
Bacon Hall	60,515.74
Bacteriological Laboratory Building	480.00
Barn	2,300.00
Boalt Hall of Law	159,287.61
Botany Building	5,600.00
Budd Hall	7,200.00
California Field Bleachers	20,000.00
California Hall	275,328.08
Campanile	216,983.02
Chemistry Addition No. 2	28,648.75
Chemistry Auditorium	36,314.67
Chemistry Building	83,529.60
Chemistry Storehouse	11,459.53
Civil Engineering Hall	39,307.15
Civil Engineering Laboratory	2,400.00
Civil Engineering Testing Laboratory	10,116.08
Concrete Bridge (near Faculty Club)	1,387.92
Concrete Bridge (near Football Statue)	3,384.33
Concrete Bridge (Telegraph Avenue)	10,922.86
Conservatory Building	10,800.00
Dairy Barn	2,400.00
Domestic Science Building	16,481.70
Drawing Building	19,354.18
Drinking Fountain (Class of 1914)	619.10
East Hall	18,000.00
Electric Construction on Campus	27,354.00
Entomological Laboratory	2,569.99
Faculty Club Building	30,000.00
Fertilizer Control Laboratory	26,385.72
Filter Plant—Strawberry Cañon	6,406.48
Gilman Hall	197,178.77
Girton Hall	4,032.34
Greek Theatre	45,000.00
Handball Courts	2,308.35
Harmon Gymnasium Building	52,098.99
Hearst Hall	60,408.92
Hearst Memorial Mining Building	646,800.70
Heating System	60,894.19
Hilgard Hall	365,078.52
Hygiene and Pathology Building	39,450.22
Manure Pit—Dairy	1,031.15
Carried forward	\$2,857,128.70

[Schedule "B"—Continued]

<i>Forward</i>	\$2,857,128.70
Mechanics Building	61,025.00
Military Science Building	7,240.14
Milk House—Dairy	4,160.60
Mill (for Carpenters' Shop)	3,493.55
John Mitchell Monument	358.95
Museum Building	3,667.77
North Hall	2,000.00
Painters' Shop	2,000.00
Philosophy Building	8,000.00
Plant Houses	700.00
Plumbing Shop	1,200.00
Platform Scales	350.00
Power House (Building and Machinery)	156,016.91
President's House	113,868.35
Printing Office Building	21,441.74
Radio Building—Mechanics Department	825.00
Rifle Range	501.90
Roads, Walks, Landscape Gardening, etc.	165,570.96
Running Track	60,000.00
Sather Esplanade	40,428.69
Sather Gateway	40,118.77
Senior Hall	5,915.02
Shooting Gallery	50.00
South Hall Addition	5,872.13
South Hall	129,578.75
Spreckels Physiological Laboratory	25,000.00
Henry Morse Stephens Hall	3,887.81
Storage Bins	1,000.00
Storehouse	10,280.53
Strawberry Cañon Weir	569.80
Students Infirmary and Annex Buildings	30,412.04
Students' Observatory	8,500.00
Sundial	350.00
Superintendent's Office (Grounds and Buildings)	1,200.00
Swimming Tank	17,200.00
Tennis Courts	22,115.24
Tool House—Botany Garden	282.90
Trunk Sewer	6,356.10
University Cottages	5,900.00
University Library Building	1,236,425.77
Vertebrate Zoology Museum Building	15,094.31
Viticultural Laboratory	400.00
Wheeler Hall	709,056.76
Women's Athletic Field	2,297.67
Women's Swimming Pool	16,883.23
	<hr/>
	\$5,804,725.09

[Schedule "C"]

REAL ESTATE AND IMPROVEMENTS NOT IN BERKELEY

Affiliated Colleges—Buildings and Site	\$415,205.30
Congressional Lands	11,418.27
Dentistry Building	29,940.98
Hahnemann Hospital Building	144,824.42
Hahnemann Hospital Site	25,000.00
La Jolla Buildings	101,655.36
La Jolla Lands	90,000.00
Lick Observatory—Lands and Buildings	387,000.00
Lick Observatory Land—Cook Tract	960.00
Lick Observatory Land—Duckworth Tract	316.42
Lick Observatory Land—Hartzoke Tract	262.73
Lick Observatory Land—Holden Tract	511.25
Lick Observatory—Barn	1,254.95
Lick Observatory—Dormitory and Cottages	55,169.08
Lick Observatory—Electric Light and Power Plant	14,350.26
Lick Observatory—Tank	2,701.00
Lick Observatory—Vault	19,834.70
Los Angeles Buildings	24,999.70
Los Angeles Real Estate	100,000.00
Meloland Buildings	3,021.53
Nurses' Home—University Hospital (part of total valuation of \$149,- 170.00—see Schedule "G")	5,679.36
Potrero Avenue Lots	10,364.39
Public Building Lands	800.00
Riverside Buildings and Improvements	178,136.92
Riverside Lands	78,769.90
Riverside Real Estate	2,500.00
San Francisco Institute of Art	235,150.00
San Francisco—Hyde Street Property	30,000.00
Southern Branch Buildings and Improvements	647,490.55
Southern Branch Land	110,000.00
Tulare County Real Estate	10,450.00
University Farm—Davis	594,868.18
University Hospital Building	671,353.63
Whittier Buildings	12,821.31
Wilmerding School—New Building	81,170.72
Wilmerding School—Old Building	24,906.46
Wilmerding School—Real Estate	67,457.09
	<hr/>
	\$4,190,344.46

Less Real Estate Acquired in Lieu of Cash:

Real Estate in San Francisco—Hyde Street Property, accepted in settlement of balance due from Boalt Trust on account of construction of Boalt Hall	\$30,000.00
Potrero Avenue Lots (San Francisco)—Accepted from Toland Medical College and credit allowed on Medical School budget	8,250.00
	<hr/>
	38,250.00
	<hr/>
	\$4,152,094.46
	<hr/>

[Schedule "N"]

ENDOWMENT FUNDS

Fund	Use of Income	Gross Income 1920-1921	Amount of Fund
Annie M. Alexander Endowment Fund.....	Support Museum of Vertebrate Zoology.....	\$19,873.60 C	\$200,041.12
Alumnae Y.W.C.A. of University of California.....	Payment to Secretary....	29.99 B	600.00
Alumni Association Life Membership Fund.....	Payment to Alumni Association.....	253.26 B	6,364.40
Alumni Hall Fund.....	Added to Fund.....	761.41 A	14,670.89
Alumnus Book Fund.....	Purchase of Books.....	290.20 C	5,372.76
Associated Women Students (Housing).....	Added to Fund.....	71.15 A	1,370.96
Base Hospital Endowment Fund.....	Support Medical School and Hospitals.....	384.50 C	7,118.65
Philo Sherman Bennett Prize Fund.....	Prizes.....	42.58 C	830.90
Joseph Bonnheim Scholarship Endowment.....	Scholarships.....	4,325.00 C	70,000.00
Edward Booth Loan Fund.....	Added to Fund.....	7.52 A	408.84
John Burns Loan Fund.....	Added to Fund.....	1.58 A	127.31
Horace W. Carpentier Endowment.....	Books and Materials (Oriental).....	5,449.30 C	100,887.50
Class of 1874 Library Fund.....	Purchase of Books.....	2.85 C	52.91
Class of 1881 Loan Fund.....	Added to Fund.....	23.44 A	1,467.08
Class of 1886 Loan Fund.....	Added to Fund.....	135.03 A	6,377.78
Class of 1887 Library Fund.....	Purchase of Books.....	23.76 C	440.00
Class of 1895 Loan Fund.....	Added to Fund.....	16.22 A	849.60
Class of 1897 Library Fund.....	Purchase of Books.....	5.68 C	105.08
Class of 1897 Loan Fund.....	Added to Fund.....	32.80 A	1,324.11
Class of 1898 Loan Fund.....	Added to Fund.....	3.79 A	277.36
Class of 1900 Library Fund.....	Purchase of Books.....	33.94 C	628.50
Class of 1902 Library Fund.....	Purchase of Books.....	6.75 C	125.00
Class of 1903 Loan Fund.....	Added to Fund.....	26.86 A	1,480.85
Class of 1906 Fund.....	Payment to Class Sec'y (Books).....	16.20 B	300.00
Class of 1907 Permanent Endowment (Books).....	Purchase of books.....	27.01 C	500.00
Class of 1907 Permanent Endowment (Class).....	Payment to Class Sec'y.....	8.10 B	150.00
Class of 1908 Fund.....	Added to Fund.....	12.57 A	242.22
Class of 1909 Endowment Fund.....	Payment to Class Sec'y.....	32.41 B	600.00
Class of 1909 Loan Fund.....	Payment to Class Sec'y.....	75.64 B	1,200.00
Class of 1910 Endowment Fund.....	Payment to Class Sec'y.....	72.92 B	1,350.00
Class of 1911 Class Fund.....	Payment to Class Sec'y.....	54.01 B	1,000.00
Class of 1911 Loan Fund.....	Payment to Class Sec'y.....	16.15 B	758.72
Class of 1912 Fund.....	Payment to Class Sec'y.....	102.63 B	1,900.00
Class of 1913 Fund.....	Payment to Class Sec'y.....	64.27 B	1,190.00
Class of 1914 Fund.....	Payment to Class Sec'y.....	68.87 B	1,275.00
Class of 1915 Fund.....	Payment to Class Sec'y.....	54.01 B	1,000.00
Class of 1916 Fund.....	Payment to Class Sec'y.....	48.61 B	900.00
Class of 1917 Endowment Fund.....	Payment to Class Sec'y.....	108.03 B	2,000.00
Class of 1919 Fund.....	Payment to Class Sec'y.....	108.03 B	2,000.00
Class of Eighty-five Fund.....	Loans to Students.....	57.70 C	1,068.17
Edith Claypole Memorial Research Fund in Pathology.....	{ 1/4 added to Fund..... 3/4 for Scholarships.....	{ 152.79 A 458.37 C }	11,467.76
P. Chas. Cole Scholarship Fund.....	Scholarship.....	157.38 C	2,964.21
Therese F. Colin European Fellowship.....	Fellowship.....	133.87 C	9,461.94
Therese F. Colin European Fellowship No. 2.....	Payment to Beneficiary.....	63.30 B	1,171.89
Consolidated Perpetual Endowment.....	General Support.....	56,537.64 C	992,217.27
Emily Chamberlain Cook Prize Fund.....	Prize in Poetry.....	69.94 C	1,314.89
John and Edward Coleman Memorial.....	Research in Otology.....	2,708.32 C	100,000.00
E. V. Cowell Fund (for gymnasium building).....	Construction of Gymnasium Building.....	13,503.42 C	250,000.00
Mrs. Emma S. Davis Scholarship Fund.....	Scholarship.....	108.03 C	2,000.00
Horace Davis Library Fund.....	Purchase of books.....	540.13 C	10,000.00
W. R. Davis Scholarship Fund.....	Scholarships.....	594.15 C	11,000.00
E. A. Denicke Library Fund.....	Purchase of books.....	108.03 C	2,000.00
E. A. Denicke Loan Fund.....	Added to Fund.....	402.16 A	8,217.36
Dental Endowment Fund.....	Added to Fund.....	413.59 A	7,968.98
Doe Library Fund.....	Unproductive.....		1,201.00
F. W. Döhrmann Memorial Loan.....	Added to Fund.....	296.91 A	6,681.46
Dolbeer Scholarships Fund.....	Scholarships.....	954.55 C	17,804.64
Helen Du Bois Endowment.....	Scholarships.....	270.96 C	5,016.52

Carried forward.....\$110,201.91 \$1,878,843.63

[Schedule "N"—Continued]

Fund	Use of Income	Gross Income 1920-1921	Amount of Fund
	<i>Forward</i>	\$110,201.91	\$1,878,843.63
Federal Endowment Fund.....	General Support.....	39,763.42 C	733,734.49
Cora Jane Flood Endowment Fund.....	Fellowships and Depart- ment of Economics....	19,753.82 C	377,549.02
Dr. C. W. and Mrs. Sarah E. Fox Memorial.....	Beds in Univ. Hospital..	4,000.00 C	100,000.00
Furrey Endowment Fund.....	Indefinite.....	16.41 C	997.12
James M. Goewey Scholarship Fund.....	Scholarships.....	886.66 C	16,415.50
O. H. Greenewald Scholarship Fund.....	Scholarships.....	1,081.22 C	20,500.00
Grubstake "W" Loan Fund.....	Added to Fund.....	10.17 A	514.24
Hamerslag Loan Fund.....	Loans to Students.....	306.84 C	6,000.00
Phoebe A. Hearst Fountain Fund.....	Purchase of books.....	11.21 C	207.60
Phoebe A. Hearst Fund (Publication of Works of Cervantes).....	Added to Fund.....	337.08 A	6,494.96
Hattie Heller Graduate Scholarship Fund.....	Scholarships.....	68.56 C	5,000.00
Isaias W. Hellman Scholarship Fund.....	Scholarships.....	2,000.00 C	50,000.00
Constantine Hering Loan Fund.....	Added to Fund.....		150.00
Herzstein Fund for Physiological Research.....	Research in Physiology..	203.94 C	3,775.76
Hesse Memorial Scholarship Fund.....	Unproductive.....		3,800.00
Hilgard Fund.....	Payment of Annuity.....	1,575.39 B	32,500.00
Hindusthane Students Loan Fund.....	Added to Fund.....	4.82 A	244.83
Chas. M. Hitchcock Endowment Fund.....	Lectures.....	540.13 C	10,000.00
Homeopathy Teaching Fund.....	Medical School—Home- opathy.....	3,300.80 C	20,000.00
George Williams Hooper Endowment.....	Unproductive.....		1,000,000.00
Horgan Bequest.....	Agriculture—Univ. Farm	2,731.60 C	35,000.00
Cornelius B. Houghton Scholarship.....	Scholarships.....	162.04 C	3,000.00
Bruce Howard Memorial.....	Scholarships.....	540.13 C	10,000.00
Howison Foundation.....	Payment of Annuity.....	2,836.75 B	75,000.00
Howison Lecture Fund.....	Lectures.....	344.12 C	6,371.00
Samuel C. Irving Prize Fund.....	Prize.....	27.01 C	500.00
Carrie M. Jones Scholarship Fund.....	Scholarships.....	4,336.46 C	100,000.00
Albert Sidney Johnston Memorial Scholar- ship.....	Scholarships.....	189.05 C	3,500.00
Jucksch Endowment Fund.....	Indefinite.....	5.66 C	600.00
Kearney Bequest.....	Dept. of Agriculture, etc.	42,866.05 C	1,126,959.30
Martin Kellow Fellowships Endowment.....	Fellowship.....	1,089.70 C	20,000.00
William Watt Kerr Memorial.....	Loans to Med. Students	387.13 C	7,000.54
Herbert Kraft Scholarship Fund.....	Scholarships.....	2,700.68 C	50,000.00
George Ladd Scholarship Fund.....	Geo. Ladd Prix de Paris	1,968.78 C	27,074.43
Leona Lebus Endowment Fund.....	Support Univ. Hospital..	216.05 C	4,000.00
Le Conte Memorial Fellowship.....	Fellowship.....	561.74 C	10,400.00
Della H. Leffin Endowment.....	Los Angeles Medical School.....	386.72 C	7,788.52
Elsie Leslie Scholarship Fund.....	Scholarships.....	103.65 C	7,768.28
Lick Observatory Fund.....	General Support.....	4,352.33 C	90,018.16
Loan Fund No. 2.....	Unproductive.....		200.00
Loan Fund No. 3.....	Added to Fund.....	2.14 A	108.94
John W. Mackay Jr. Endowment.....	Fellowships and Depart- ment of Mechanics....	6,274.85 C	114,036.55
Massachusetts Relief Fund Endowment.....	Support—Univ. Hospital	5,401.33 C	100,000.00
Medal Loan Fund.....	Added to Fund.....	5.02 A	383.04
Memorial Gift Fund of the Class of 1916.....	Added to Fund.....	258.88 A	5,025.00
Menorah Prize Fund.....	Added to Fund.....	2.12 A	50.00
Men's Dormitory Fund.....	Added to Fund.....	32.38 A	623.90
Eugene Meyer Jr. Library Endowment.....	Purchase of books.....	108.03 C	2,000.00
D. O. Mills Endowment Fund.....	Dept. of Philosophy.....	9,212.23 C	170,553.76
Mining Student Loan Fund.....	Added to Fund.....	184.64 A	8,964.86
Nalanda Loan Fund.....	Added to Fund.....	1.06 A	53.78
Napa Seminary Loan Fund.....	Added to Fund.....	14.56 A	979.70
Bernard Nathan Scholarship.....	Scholarships.....	270.07 C	5,000.00
Oriental Institute Endowment.....	Unproductive.....		4,959.55
Paget Scholarship Fund.....	Scholarships.....	162.84 C	3,009.09
Whitney Palache Endowment (for Hospital).....	Bed in Univ. Hospital...	540.13 C	10,000.00
Parker Memorial Fund.....	Indefinite.....	36.95 C	748.44
Frank M. Pixley Scholarship Fund.....	Scholarship.....	192.46 C	3,563.22
Prytanean Fund (Students' Union).....	Added to Fund.....	24.27 A	467.70
Prytanean Fund (Hospital).....	Added to Fund.....	18.03 A	463.22

Carried forward.....\$272,610.02 \$6,282,898.13

[Schedule "N"—Continued]

Fund	Use of Income	Gross Income 1920-1921	Amount of Fund
	<i>Forward</i>	\$272,610.02	\$6,282,898.13
Prytanean Fund (Housing Facilities).....	Added to Fund.....	76.49 A	1,473.79
Michael Reese Library Fund.....	Purchase of books.....	2,700.68 C	50,000.00
Richardson Latin Translation Prize Fund.....	Prize.....	86.42 C	1,600.00
Ralph D. Robertson Memorial Loan Fund.....	Added to Fund.....	3.64 A	330.64
Herman Royer Endowment Fund.....	Added to Fund.....	322.46 A	6,213.14
Sheffield Sanborn Scholarship.....	Scholarships.....	810.20 C	15,000.00
San Francisco Girls' Union Scholarship.....	Scholarship.....	250.00 C	5,000.00
San Joaquin Women's Club Loan Fund.....	Added to Fund.....	.96 A	149.04
Jane K. Sather Fund—for the erection of Campanile and Bells.....	Added to Fund (awaiting distribution).....	160.33 A	8,016.98
Jane K. Sather Classical Chair Fund.....	Dept. of Greek and Latin.....	7,758.74 C	147,841.03
Jane K. Sather Historical Chair Fund.....	Dept. of History.....	7,936.13 C	146,928.09
Jane K. Sather Historical Library Fund.....	Purchase of books.....	667.27 C	12,461.68
Jane K. Sather Law Library Fund.....	Purchase of books.....	1,163.63 C	21,543.35
Jane K. Sather Library Fund.....	Purchase of books.....	540.13 C	10,000.00
Jane K. Sather Fund (awaiting distribution).....	Added to Fund.....	6.64 C	247.48
Scripps Institution "Agassiz" Fund.....	Added to Fund.....	369.57 A	6,819.66
E. W. Scripps Retirement Fund.....	Added to Fund.....	113.55 A	4,113.65
Searles Fund.....	Research.....	16,356.21 C	584,590.98
Lucy M. Shaw Bequest.....	Bed in Hahnemann Hospital.....	328.33 C	5,000.00
Snell Seminary Memorial Loan Fund.....	Added to Fund.....	1.74 A	317.98
Special Senior Class Loan Fund.....	Added to Fund.....	3.07 A	200.06
Horatio Stebbins Scholarship Fund.....	Scholarship.....	216.05 C	4,000.00
Students' Co-operative Society Fund.....	Added to Fund.....	666.36 A	13,827.90
Summer Session Endowment Fund.....	Indefinite.....	324.08 C	6,000.00
Talbot Bequest.....	Research — Political Science.....	189.63 C	10,690.28
Bertha Henicke Taussig Memorial Scholarship.....	Scholarships.....	540.13 C	10,000.00
Willard D. Thompson Memorial—Fund.....	Scholarships.....	3,309.71 C	55,734.98
Edward Tompkins Endowment Fund.....	Dept. Oriental Languages.....	6,412.54 C	106,829.09
Twenty-two Fifty-seven Endowment.....	Added to Fund.....	.50 A	50.50
University Endowment Fund.....	General Support.....	3,820.83 C	72,925.14
University Hospital Endowment Fund.....	Support Univ. Hospital.....	35.09 C	649.68
University Hospital Endowment—San Francisco Maternity.....	Support Univ. Hospital.....	540.13 C	10,000.00
University Medal Fund.....	University Medal.....	210.44 C	3,896.00
Veltin Endowment Fund.....	Students Infirmary.....	54.01 C	1,000.00
Walcott Loan Fund.....	Added to Fund.....	17.78 A	353.45
F. J. Walton Memorial Loan Fund.....	Added to Fund.....	486.52 A	9,618.97
Mary J. Watson M.D. Fund for Homeopathic Instruction.....	Scholarship—Med. Sch.....	67.52 C	1,250.00
Barbara Weinstock Lectureship Fund.....	Lectures.....	424.92 C	6,850.00
Whiting Fund.....	Fellowship and Department of Physics.....	1,423.26 C	26,350.00
J. Clute Wilmerding Endowment Fund.....	Support of Wilmerding School.....	28,293.07 C	415,840.91
Women's Dormitory Fund.....	Added to Fund.....	171.90 A	3,312.25
Xi Psi Phi (Dental) Loan Fund.....	Added to Fund.....	3.26 A	215.97
Y. W. C. A. Endowment Fund.....	Payment to Secretary Y. W. C. A.....	324.99 B	6,500.00
		\$359,799.03	\$8,076,640.80

[Schedule "N"—Continued]

SEGREGATION OF INCOME

A	For Additions to Funds	\$5,651.22
B	For Payments to Beneficiaries of Trust Funds	5,913.56
C	For Current Use	348,234.25
		<hr/>
		\$359,799.03

NOTE.—With regard to the income shown as "For Current Use" it should be understood that in several cases unexpended income at the end of the year is added to the principal of the fund.

RECONCILIATION OF ENDOWMENT FUNDS

Total Funds June 30, 1920	\$7,253,926.57
Additions to Endowment as per Schedule No. 16	826,638.48
	<hr/>
	\$8,080,565.05
Less Withdrawals from Endowment Funds used as income (see Schedule No. 8)	\$2,020.62
Reductions in Funds as follows:	
Della H. Leffin Endowment Fund—Portion of Real Estate valuation written off	833.33
Horgan Bequest—Transfer of amounts of income previously credited to fund in error	1,070.30
	<hr/>
	3,924.25
Total Funds June 30, 1921	<hr/>
	\$8,076,640.80

INCOME

FROM JULY 1, 1920, TO JUNE 30, 1921

Schedule

No. 10	United States	\$174,620.49	
No. 2	State Appropriations	3,154,751.54	
No. 3	Students' Fees and Deposits	721,012.38	
No. 4	Hospitals, Infirmary and Professional Colleges....	602,257.07	
No. 5	Departmental Sales and Miscellaneous Receipts	540,618.28	
No. 6	Income from Endowment Investments:		
	For Current Use	\$348,234.25	
	For Additions to Endowment		
	Funds	5,651.22	
	For Payments on Trust Funds....	5,913.56	
			359,799.03
No. 7A	Gifts for Current Use	\$137,063.56	
No. 7B	Gifts for Buildings, Equipment, etc.	406,447.59	
No. 7C	Gifts for Endowment	773,361.00	
			1,316,872.15
No. 8	Withdrawals from Endowment Funds used as		
	Income	2,020.62	
			<u>\$6,871,951.56</u>

EXPENDITURES

FROM JULY 1, 1920, TO JUNE 30, 1921

Schedule

No. 9	Administration	\$264,666.00	
No. 10	General Maintenance, Operation, etc.	401,789.09	
No. 11	Land, Buildings, Improvements, Alterations. etc.	103,872.11	
No. 12	Education and Research	4,640,456.93	
No. 13	Scholarships, Fellowships and Prizes	56,733.29	
No. 14	Miscellaneous Expenditures not Classified	389,232.89	
No. 15	Payments to Beneficiaries of Trust Funds, etc.	11,199.71	
No. 16	Additions to Endowment Funds	826,638.48	
			<hr/>
			\$6,694,588.50
No. 17	Expenditures Prior to June 30, 1920, brought forward	\$607,091.76	
No. 17	Less Income Prior to June 30, 1920, brought forward	500,398.31	
			<hr/>
			106,693.45
No. 18	Income Prior to June 30, 1921, carried forward		868,097.88
			<hr/>
			\$7,669,379.83
No. 18	Less Expenditures Prior to June 30, 1921, carried forward....	514,776.26	
			<hr/>
	Net Total Expenditures		\$7,154,603.57
	Income as above		6,871,951.56
			<hr/>
	Deficit for the year		\$282,652.01
			<hr/>
	Debit Balance—Revenue Account, June 30, 1921	\$254,947.74	
	Credit Balance—Revenue Account, June 30, 1920	27,704.27	
			<hr/>
			\$282,652.01

NOTE.—The deficit of \$282,652.01 includes all overdrafts brought forward from 1919-1920 except a portion of the University Farm Overdraft amounting to \$60,501.38, which is to be met from 1921-1922 appropriations.

[Schedule No. 1]

INCOME FROM UNITED STATES

Adams Fund	\$15,000.00
Hatch Fund	15,000.00
Morrill Fund	50,000.00
Smith Lever—Federal	67,026.85
Federal Supplementary Extension Fund	27,593.64
	<hr/>
	\$174,620.49
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[Schedule No. 2]

INCOME FROM STATE APPROPRIATIONS

Agriculture (General Support and Maintenance)	\$474,942.40
Citrus Experiment Station (Support)	20,037.42
Deciduous Fruits	63,814.99
Deficiency Claim (1920-1921)	300,000.00
Farm Advisors	132,592.27
General Support	200,000.00
Medical School	50,000.00
Salaries	74,725.00
Scripps Institution	17,500.00
Smith Lever—State	57,026.85
Southern Branch (Various Appropriations)	248,825.39
University Extension	50,000.00
University Farm—Animal Husbandry	10,542.38
University Farm—Creamery Building	1,639.48
University Farm—Dormitory	212.38
University Farm—Sewerage and Water System	2,791.92
University Farm—Small Buildings	2,314.64
University Farm—Athletic Accommodations	7,500.00
University Farm—Class Room Building	230.12
State University Fund:	
General Support	\$1,346,258.05
Permanent Building Fund	50,000.00
State of California Scholarships	3,500.00
	<hr/> 1,399,758.05
State Board of Education—Smith Hughes Act (\$2,411.25 additional shown under Southern Branch Income— Schedule No. 3):	
Agriculture Teacher Training	\$13,349.18
Industrial Teacher Training	8,501.30
Part Time Teacher Training	5,820.99
Southern Branch Teacher Training	7,137.65
	<hr/> 34,809.12
State Department of Agriculture—Walnut Research	5,489.13
	<hr/> <hr/> \$3,154,751.54

[Schedule No. 3]

STUDENTS' FEES AND DEPOSITS

Agriculture Deposits	\$1,091.59
Anatomy Fees	245.00
Anthropology Fees 1B	626.00
Astronomy Fees	406.25
Bacteriology Deposits	6.44
Biochemistry Deposits	305.15
Botany Fees	1,569.75
Botany 2A Syllabus Fees	170.00
Changing Course Fees	4,748.50
Chemistry Deposits	38,581.55
Civil Engineering Fees	5,268.40
Delayed Payment Fees	2,792.00
Delayed Registration Fees	2,585.00
Diploma Fees	5.20
Economics 1A and 1B Fees	2,017.25
Economics 3A Fees	418.50
Economics 10 Fees	258.50
Economics 11 Fees	210.50
Economics 123 Fees	64.50
Economics 124 Fees	76.00
Economics 150 Fees	238.00
Economics 175 Fees	19.20
Education 101 Fees	484.50
Education 121 Fees	481.00
Education 126 Fees	29.50
Education 141 Fees	70.50
Education 143 Fees	13.50
Education 200 Fees	46.50
Education 315 Fees	3.00
Education 319 and 320 Fees	585.00
Education Syllabus Fees	284.50
English Fees	3,820.36
English Syllabus Fees	424.49
Geography 1A Fees	1,249.75
Graphic Art Fees	575.00
Gymnasium Fees	36,620.87
Gymnasium Fines	285.80
Gymnasium Suits Fees—Men	6,885.31
Gymnasium Suits Fees—Women	13,855.85
History Fees	2,262.75
History Syllabus Fees	1,970.10
Household Art Deposits	1,130.35
Household Science Deposits and Fees	492.91
Hygiene Deposits	237.69
Infirmary Fees	61,430.60
Key Deposits	1,000.00
Landscape Gardening Fees	67.00
Carried forward	\$196,010.11

[Schedule No. 3—Continued]

Forward	\$196,010.11	
Law Library Fees	6,693.75	
Library Deposits	200.00	
Mechanics Deposits	3,553.20	
Medical Appointment Fees	188.00	
Military Uniforms Fees	172.87	
Mineralogy and Geology Fees	705.50	
Mining and Metallurgy Deposits	1,246.31	
Non-Resident Fees	20,500.00	
Pathology and Bacteriology Deposits	2,076.16	
Philosophy Fees	200.00	
Physical Appointment Fees	86.50	
Physics Deposits	4,228.25	
Physiology Deposits	436.16	
Political Science Fees	695.00	
Psychology Fees	407.00	
Special Examination Fees	3,974.00	
Zoology Deposits	2,932.35	
Dentistry Fees, Deposits, etc.	63,844.22	
Dentistry—Special Students' Deposit Account	2,831.26	
Los Angeles Medical Department Fees	4,627.10	
Medical School Fees and Deposits	30,592.74	
Summer Session and Intersession:		
Intersession 1921	\$28,906.04	
Summer Session 1920	7,160.81	
Summer Session 1921	92,365.58	
Summer Session—Civil Engineering	2,908.61	
Summer Session—Los Angeles, 1919	24.00	
Summer Session—Los Angeles, 1920	4,918.34	
		136,283.38
Southern Branch:		
Fees, Deposits, etc., 1920–1921	\$87,739.05	
Fees, Deposits, etc., 1921–1922	8,236.82	
		95,975.87
University Extension:		
University Extension—Berkeley and San Francisco	\$91,382.36	
University Extension—Los Angeles	51,153.79	
University Extension—Dentistry	16.50	
		142,552.65
		<u>\$721,012.38</u>

[Schedule No. 4]

HOSPITALS, INFIRMARY AND PROFESSIONAL COLLEGES

Hahnemann Hospital	\$193,973.54
University Hospital	347,999.58
University Hospital—Professional Fees Reserve	44.00
University Hospital—Radium Earnings Reserve	2,214.54
Dental Department (Infirmary, etc.)	36,994.00
Los Angeles Medical Department Dispensary	11,081.00
Students' Infirmary—Operations and Dental Work	9,950.41
	<hr/>
	\$602,257.07
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[Schedule No. 5]

DEPARTMENTAL SALES AND MISCELLANEOUS RECEIPTS

AGRICULTURAL:

Agriculture—Education	\$5,877.61	
Agriculture—Extension	292.50	
Agriculture—Dean's Office	10.18	
Agronomy	39.43	
Chicken Pox Vaccine	5,739.80	
Citrus Experiment Station	7,651.95	
Citrus Investigations (Citrus Growers and Shippers)	2,199.96	
Dairy Certification—Alameda	1,864.26	
Dairy Certification—San Francisco	1,707.95	
Dairy	20,217.00	
Deciduous Fruits	714.67	
Fertilizer Control	1.00	
Floriculture	932.82	
Forestry	170.15	
Hog Cholera Serum	3,701.77	
Imperial Valley	524.15	
Kearney Experiment Station	3,326.19	
Lemon Investigations (Lemon Men's Club)	2,880.00	
Nutrition	27.59	
Poultry Investigations (Petaluma Poultrymen)	2,000.00	
Soil Survey	85.00	
University Farm	253,550.88	
Veterinary	753.67	
Viticulture	6,099.21	
		\$320,367.74

VARIOUS:

Sale of "Cervantes"	\$58.20	
Sale of History I Syllabi	66.15	
Sale of "A Brief Account of Lick Observatory"	180.68	
Sale of "Keeler Volume"	8.00	
Sale of "Moses Volume"	23.60	
Sale of Publications	7,324.09	
Sale of Syllabi	5,905.11	
Sale of "Tebtunis Papyri" .....	.09	
Sale of Weinstock Lecture Publications	73.15	
Campanile Maintenance	763.93	
Horgan Bequest—Refund on Expenditures 1919-1920	196.51	
Library Exchange	333.74	
Greek Theatre (Music and Drama)	53,409.34	
Rental of Hyde Street Property—San Francisco	480.00	
Scripps Institution—Rents and Miscellaneous Receipts....	9,332.04	
Shipping Board Course—United States Shipping Board	7,800.00	
Southern Branch Cafeteria	45,601.06	
Printing Office Profit	34,941.94	
Storehouse Profit	3,075.52	
Carried forward	\$169,573.15	\$320,367.74

[Schedule No. 5—Continued]

<i>Forward</i>		\$169,573.15	\$320,367.74
VARIOUS—(Continued):			
Library Fines	2,837.25		
Interest on Bank Balances, Notes, etc.	1,093.99		
Refunds on Freight Charges	214.28		
Rents—General University Property	2,016.98		
Unclaimed Checks	2,221.51		
Sale of Wood, Junk, Old Equipment, etc.	3,067.90		
Refunds on Insurance	490.42		
Public Health Nursing Courses	1,402.23		
Interest on Dentistry Building Alterations Account	1,371.80		
Gains in Investments of Prior Years	2,186.84		
Miscellaneous Receipts (Revenue Account)	144.44		
Class of 1881 Loan Fund—Payment of note previously written off	100.00		
Doe Library Fund—Adjustment of amount of fund to equal assessments paid on Kennedy Mining & Milling Co. stock (see Schedule No. 14)	780.00		
Kearney Bequest—Increase in fixed assets for year 1920–1921 out of income from Kearney Vineyard	31,045.40		
Sales of Old Buildings in Prior Years—Adjustment of amounts credited direct to Asset Accounts in error. (See Schedule “M.”)			
Palmer House	\$180.00		
Barrows Street Property	50.00		
North Hall	150.00		
Storehouse Building	75.00		
	455.00		
Federal Endowment Fund—Adjustment of cash received from Sale of Congressional Lands in Yuba County in May, 1916—(see Schedule No. 16)	1,249.35		
		220,250.54	
		\$540,618.28	

[Schedule No. 6]

INCOME FROM ENDOWMENT INVESTMENTS

Bond Interest	\$89,561.71
Dividends on Stocks	35,019.20
Interest on Bear Gulch Water Co. Notes	1,606.13
Interest on Berkeley Real Estate (transferred from Permanent Building Fund—See Schedule No. 14)	2,538.38
Interest on Hotel Rafael Investment	2,487.10
Interest on Hahnemann Hospital Loan	2,220.00
Interest on Hooper Foundation Expenditures	33,399.35
Interest on Moneys not Invested	17,677.80
Interest on Radium Loan—Medical School and Hospitals	2,539.94
Interest on Equity in Horgan Bequest	2,731.60
Interest on Special Deposit—Union Trust Co., San Francisco .....	.50
Kearney Vineyard Income (see Schedule No. 5)	37,628.08
Loan Fund Interest	219.05
Mortgage Interest	23,619.82
Rents	108,550.37
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	\$359,799.03

[Schedule No. 7]

GIFTS

A. FOR CURRENT USE:

American School of Oriental Research in Jerusalem— Congregation Emanu-El	\$100.00
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Anatomy Research:

American Medical Association—Grant No. 46	\$450.00
American Red Cross	3,000.00
Norman Bridge	1,000.00
Elizabeth Thompson Science Fund	200.00
	<hr/> 4,650.00

Art Exhibition—Wigginton E. Creed	400.00
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Botany Department—W. L. Jepson	500.00
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Botulinus Investigation—National Cannery Association	14,300.00
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Dental Clubhouse—Dental Students	911.59
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Dentistry Research:

California State Dental Association	\$200.00
National Dental Association	500.00
	<hr/> 700.00

Economics (Salary of Supervisor of Practice Work)—	
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American Red Cross	2,400.00
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Fellowships:

Du Pont Fellowship—E. I. Du Pont de Nemours Co.	\$750.00
Marjorie Greene Foster Fellowship—Mrs. Edythe Foster	150.00
Le Conte Fellowship—Various Donors....	450.00
Fellowships in Pacific Coast History— Native Sons of the Golden West	2,250.00
Fellowship in Radiographic Research (Dentistry) — American Radiograph Laboratories	300.00
	<hr/> 3,900.00

Hooper Foundation for Medical Research:

Investigation of the Effects of Chaul- moogra Oil:	
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P. K. Brown	\$1,000.00
California Tuberculosis Association..	1,500.00
National Tuberculosis Association	1,100.00
	<hr/> 3,600.00

Studies on the relation of blood volume and hemo- globin fluctuations to altitude and research in anemia—Rochester University	10,000.00
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Hygiene—American Red Cross	700.00
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Library:

Armenian Students	\$25.00
Class in English 114	24.25
H. R. Hatfield	54.38
Class in English 121	31.50
	<hr/> 135.13

Carried forward	\$42,296.72
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[Schedule No. 7—Continued]

Forward		\$42,296.72
A. FOR CURRENT USE—(Continued):		
Lick Observatory:		
American Academy of Arts and Sciences	\$360.00	
W. H. Crocker	1,200.00	
W. H. Crocker (Eclipse, 1922)	1,200.00	
		2,760.00
Lick Observatory—Chile Station:		
F. W. Bradley	\$1,000.00	
Ogden Mills	1,000.00	
Dr. Swansey	1,000.00	
Alumnus of University of California	1,000.00	
A. B. Spreckels	1,000.00	
		5,000.00
Museum of Vertebrate Zoology:		
Annie M. Alexander	\$9,507.82	
A. B. Howell	50.00	
J. Grinnell	75.00	
		9,632.82
Musical Scores—Mrs. Dora F. Williams		100.00
Pensions—Carnegie Institution		31,415.00
Prizes:		
Greek Theatre Play—Anonymous	\$200.00	
Banking Essays—B. F. Lynip	85.00	
Civics—Anonymous	50.00	
		335.00
Research Work—An Alumnus		2,500.00
Scholarships:		
American Red Cross	\$712.50	
Boomerang Scholarship—Australian		
Alumnus	500.00	
College Women's Club of Berkeley	200.00	
Egyptian Government	991.02	
Durant Lodge No. 268, F. & A. M.	300.00	
Phoebe A. Hearst Scholarship—W. R.		
Hearst	2,400.00	
Wm. Watt Kerr Scholarship—Various		
Donors	500.00	
Ralph W. Kinney Scholarship in Agri-		
culture—Ralph W. Kinney	1,000.00	
Knights of Columbus	4,520.00	
James Rosenberg Memorial—Parents of		
James Rosenberg	690.00	
San Jose High School	125.00	
Morse Stephens Scholarship—J. D.		
Fletcher	500.00	
Erma Stewart Scholarship—Mr. and		
Mrs. D. M. Stewart	200.00	
Levi Strauss & Co.	3,500.00	
Swedish American Patriotic League	125.00	
Wachs Scholarships—Wachs Realty Co.	300.00	
Carried forward	\$16,563.52	\$94,039.54

[Schedule No. 7—Continued]

<i>Forward</i>		\$16,563.52	\$94,039.54
A. FOR CURRENT USE—(Continued):			
Scholarships—(Continued):			
Enid Williams Memorial Scholarship—			
Mrs. Evan Williams	\$250.00		
Dorothy Todd Memorial Scholarship—			
Pacific Coast Committee, Y. W. C. A.	300.00		
			17,113.52
Scripps Institution for Biological Research:			
Maintenance—Ellen B. Scripps	\$9,000.00		
Special Fund—E. W. Scripps	10,640.50		
			19,640.50
University Farm—Physical Education—Associated			
Students University Farm		250.00	
University Hospital:			
Surgical Supplies—Kate B. Brizard.....	\$200.00		
Pediatrics—W. H. Crocker	2,000.00		
			2,200.0
Zoology—Bertha Coupe		45.00	
Zoology (Kofoed Research Fund)—Various Donors		3,775.00	
			137,063.56
B. FOR BUILDINGS, EQUIPMENT, ETC.:			
Infirmiry Ambulance—Associated Students	\$600.00		
Memorial Bench—Class of 1920	2,000.00		
Rest Room in Students' Union Building—Prytanean			
Society		100.00	
San Francisco War Memorial—Various Donors	368,831.86		
Stephens Memorial—Various Donors	30,558.89		
Students' Infirmiry Equipment—Various Donors.....	48.50		
Women's Swimming Pool—Associated Women Students....	1,350.00		
University Farm Gymnasium Building—Various Donors	2,958.34		
			406,447.59
C. FOR ENDOWMENT:			
Alumni Association—			
For Alumni Life Membership Fund	\$1,354.40		
Mrs. Robina M. Booth—			
For Edward Booth Loan Fund	200.00		
Heirs of John C. Coleman—			
For John C. and Edward Coleman Memorial Fund.....	100,000.00		
Anonymous—			
For Hattie M. Heller Graduate Scholarship Fund.....	5,000.00		
W. E. Hering—			
For Constantine Hering Loan Fund	150.00		
Estate of James C. Horgan—			
For Horgan Bequest (book valuation of equity in estate held in trust by Security Trust and Savings Bank, Los Angeles)	35,000.00		
Trustees of Hahnemann Hospital—			
For Homeopathic Teaching Fund (adjustment of fund acquired in 1918)	20,000.00		
<i>Carried forward</i>	\$161,704.40	\$543,511.15	

[Schedule No. 7—Continued]

<i>Forward</i>	\$161,704.40	\$543,511.15
Estate of Della H. Leffin—		
For Della H. Leffin Endowment Fund	300.06	
Estate of George Leslie Darby—		
For Elsie Leslie Scholarship Fund (for widow's sons)	7,768.28	
Class of 1916—		
For Memorial Gift Fund—Class of 1916	3,000.00	
F. W. Bradley—		
For Mining Students Loan Fund	1,000.00	
Mrs. F. C. Smith—		
For Napa Seminary Loan Fund	100.00	
Various Donors—		
For Parker Memorial Fund	182.00	
Prytanean Society—		
For Prytanean Hospital Fund	125.00	
Edward F. Searles—		
For Searles Fund (Cash \$234,440.98 and Alameda Marsh Lands \$350,000)	584,440.98	
E. W. Scripps—		
For Scripps Retirement Fund	4,000.00	
Frederick C. Talbot—		
For Talbot Bequest	10,690.28	
Anonymous—		
For Twenty-two Fifty-seven Endowment Fund	50.00	
		<hr/> 773,361.00
		<hr/> \$1,316,872.15
		<hr/>

[Schedule No. 8]

WITHDRAWALS FROM ENDOWMENT FUNDS USED AS INCOME

Wilmerding Endowment Fund	<u>\$2,020.62</u>
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[Schedule No. 9]

ADMINISTRATION

Administrative Assistance	\$23,425.17
Alumni Association	3,000.00
Auditing	4,076.32
Comptroller's Office Assistance	65,305.98
Examination of Schools	3,835.63
Expense—Administrative	21,690.32
Inauguration Expenses	1,707.00
Intelligence Tests	928.09
Postage	5,503.29
President's Contingent	3,000.00
Printing, Stationery and Office Supplies	30,554.21
Recorder's Office Assistance	23,888.26
Salaries	68,542.85
Telephone, Telegraph and Express	9,208.88
	<hr/>
	\$264,666.00

[Schedule No. 10]

GENERAL MAINTENANCE, OPERATION, ETC.

Fuel	\$819.65
Heating and Lighting	91,175.55
Interest on Money used for Working Capital	19,502.23
Janitors	84,113.25
Repairs	30,910.74
Site	33,121.31
State Compensation Insurance	12,599.27
Water	13,625.54
Students' Infirmary	69,449.38
Students' Infirmary Donations	- 71.70
Gymnasium Suits Maintenance—Men	5,839.67
Gymnasium Suits Maintenance—Women	14,030.64
Gymnasium Fees Expenditures	26,530.16
	<u>\$401,789.09</u>

[Schedule No. 11]

LAND, BUILDINGS, IMPROVEMENTS, ALTERATIONS, ETC.

In Berkeley:

Alterations in Armory	\$2,291.40	
Anatomy Building Alterations	7.20	
Chemistry Building Alterations	7,463.20	
Drill Field and Playground	41,695.54	
Greek Theatre Marble Chairs	28.00	
Handball Courts	2,308.35	
Harmon Gymnasium Showers	6.75	
Hearst Hall Alterations	1,010.65	
Infirmery Fire Escape and Porch	1,338.95	
Memorial Bench—Class of 1920	2,000.00	
Permanent Building Fund Contingencies	3,352.70	
Planting	2,793.15	
Power House Equipment	2,519.35	
President's House—Furnishings and Repairs	175.00	
Henry Morse Stephens Hall	3,887.81	
Women's Swimming Pool Improvements	4,437.89	
		<hr/>
		\$75,315.94

Not in Berkeley:

Medical School and Hospitals—Nurses Home:

Portion of investment valuation charged to Medical School and Hospitals, 1920–1921	\$5,679.36
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University Farm:

Animal Husbandry	\$3,514.24	
Athletic Accommodations	7,500.00	
Classroom Building	230.12	
Creamery Building	1,639.48	
Dormitory	212.38	
Sewerage and Water System	2,791.92	
Small Buildings	2,314.64	
Income	1,715.69	
Income (Donation)	2,958.34	
		<hr/>
	22,876.81	
		<hr/>
		28,556.17
		<hr/>
		\$103,872.11

NOTE.—The expenditures at the University Farm
represent the following:

Beef Feeding Plant	\$2,722.17
Bull Shed	4,473.94
Sewerage and Water System	2,800.48
Gymnasium	10,458.34
Creamery Building	1,639.48
Classroom Building	230.12
Dormitory Building	212.38
Blacksmith Shop	339.90
	<hr/>
	\$22,876.81

[Schedule No. 12]

EDUCATION AND RESEARCH

Various Departments at Berkeley:

From General Funds	\$1,308,321.69
From Endowment Income	80,308.35
From Donations	21,074.06
From Morrill Fund	22,500.20
From Fees, etc.	38,823.30
	<hr/>
	\$1,471,027.60

Agricultural Departments: (See also Schedules No. 11 and No. 14)

From Adams Fund	\$15,000.00
From Hatch Fund	15,000.00
From Endowment Income	40,621.99
From Smith Lever: Federal	67,026.85
From Smith Lever: State	57,026.85
From State Appropriations	703,904.35
From Federal Extension Fund	27,593.64
From Morrill Fund	27,499.80
From Departmental Sales	63,841.93
From General Funds	76,661.39
From Donations	250.00
	<hr/>
	1,094,426.80

Medical School and Hospitals: (See also Schedule No. 11)

From General Funds	\$323,004.34
From University Hospital Earnings	347,999.58
From University Hospital Radium Earnings Reserve...	2,539.94
From University Hospital Professional Fees Reserve...	239.39
From Hahnemann Hospital Earnings	193,973.54
From Endowment Income	72,140.71
From State Appropriation	50,000.00
From Donations	7,824.14
	<hr/>
	997,721.64

Dental Department:

From General Funds	\$10,000.00
From Fees, Deposits, and Infirmary Receipts	69,199.06
From Students' Special Deposit Account	2,965.13
From Donations (Research)	1,096.68
	<hr/>
	83,260.87

Hooper Foundation:

Medical Research (Advance)	\$44,743.80
Biological Research (Advance)	66.83
Botulinus Investigations (Donation)	16,385.95
Research, Rochester University (Donation)	1,935.34
Research, Various (Donation)	1,916.69
Research, National Tuberculosis Association	855.37
	<hr/>
	65,903.98

Lick Observatory (including Chile Station, Eclipse Expedition, etc):

From General Funds	\$41,721.04
From Endowment Income	4,352.33
From Donations	8,397.29
	<hr/>
	54,470.66

Carried forward \$3,766,811.55

[Schedule No. 12—Continued]

Forward	\$3,766,811.55	
Los Angeles Medical Department:		
From General Funds	\$9,000.00	
From Fees	3,945.10	
From Dispensary Receipts	13,520.21	
		26,465.31
University Extension:		
From University Extension Fees, Berkeley	\$85,681.24	
From University Extension Fees, Los Angeles	51,153.79	
From State Appropriation, Berkeley	31,254.69	
From State Appropriation, Los Angeles	18,745.31	
		186,835.03
Scripps Institution:		
From General Funds	\$5,000.00	
From State Appropriation	17,500.00	
From Donations	7,933.29	
From Donations (Special Fund)	9,430.20	
From Rents and Miscellaneous Receipts	9,332.04	
		49,195.53
Wilmerding School:		
From Endowment Income	\$28,293.07	
From Withdrawal from Endowment Fund	2,020.62	
		30,313.69
Summer Session and Intersession:		
• Intersession, 1920	\$2,286.33	
Intersession, 1921	16,185.93	
Intersession, Dentistry, 1921	900.00	
Summer Session, 1920	18,984.90	
Summer Session, 1921	73,507.05	
Summer Session, Civil Engineering	2,096.80	
Summer Session, Los Angeles, 1920	2,767.37	
Summer Session, Los Angeles, 1921	34,718.24	
Intersession, 1920—Refund of Income	23.67	
Summer Session, 1919—Refund of Income	17.00	
		151,487.29
Southern Branch:		
From State Appropriations	\$248,825.39	
From General Funds	87,194.52	
From Fees and Miscellaneous Receipts	57,962.24	
		393,982.15
Smith-Hughes Act—Vocational Teacher Training:		
From Smith-Hughes—Agricultural	\$13,349.18	
From Smith-Hughes—Industrial	8,501.30	
From Smith-Hughes—Southern Branch	7,137.65	
From Smith-Hughes—Part Time	5,820.99	
		34,809.12
Miscellaneous:		
American School of Oriental Research in Jerusalem—		
From Donation	\$100.00	
Art Exhibition—From Donation	457.26	
		557.26
		<u>\$4,640,456.93</u>

[Schedule No. 13]

DISBURSEMENTS FOR SCHOLARSHIPS, FELLOWSHIPS AND PRIZES

Florence Preble Baker Scholarship	\$150.00
Joseph Bonnheim Memorial Scholarships	4,400.00
Edith W. Claypole Memorial Research Fellowship	1,200.00
P. Charles Cole Scholarship	62.50
Emily Chamberlain Cook Prize in Poetry	50.00
William R. Davis Scholarships	750.00
John and Bertha Dolbeer Scholarships	800.00
Helen DuBois Scholarships	250.00
DuPont Fellowship	750.00
Egyptian Scholarship	759.64
Cora Jane Flood Fellowship	1,000.00
James M. Goewey Fellowship	600.00
Greek Theatre Play Prize	23.00
Louise and Otto H. Greenewald Scholarships	500.00
Phoebe A. Hearst Scholarships	2,550.00
Isaias W. Hellman Scholarships	2,000.00
Cornelius B. Houghton Scholarship	125.00
Bruce Howard Memorial Scholarship	450.00
Samuel C. Irving Prize	25.00
Albert Sidney Johnston Scholarship	350.00
Carrie M. Jones Scholarships	6,940.00
Martin Kellogg Fellowship	217.00
Wm. Watt Kerr Scholarship	400.00
Ralph W. Kinney Scholarship	250.00
Knights of Columbus Scholarships	4,937.40
Herbert Kraft Scholarship	250.00
Geo. Ladd Prix de Paris in Music	1,900.00
LeConte Memorial Fellowship	1,200.00
Bernard Nathan Scholarships	375.00
Native Sons' Fellowships in Pacific Coast History	3,000.00
F. V. Paget Scholarship	400.00
Frank M. Pixley Scholarship	150.00
Red Cross Scholarship	712.50
James Rosenberg Memorial Scholarship	600.00
Richardson Latin Translation Prize	75.00
San Francisco Girls' Union Scholarships	218.75
Sheffield Sanborn Scholarships	1,500.00
State of California Scholarships	3,262.50
Horatio Stebbins Memorial Scholarship	240.00
Levi Strauss Scholarships	3,575.00
Swedish-American Patriotic League Scholarship	125.00
Bertha Henicke Taussig Memorial Scholarship	700.00
Willard D. Thompson Memorial Scholarships	3,000.00
University Fellowships	4,000.00
University Medal	160.00
Enid Williams Memorial Scholarship	250.00
Whiting Fellowships	1,500.00

\$56,733.29

[Schedule No. 14]

MISCELLANEOUS EXPENDITURES NOT CLASSIFIED

From Departmental Sales and Miscellaneous Receipts:

Agricultural:

Chicken Pox Vaccine Sales	\$2,161.47
Dairy	23,340.68
Dairy Certification—Alameda	1,561.07
Dairy Certification—San Francisco.....	1,255.21
Fertilizer Control	5.60
Hog Serum Sales	6,377.73
University Farm Income	215,995.92
	<hr/>
	\$250,697.68

Greek Theatre (Music and Drama) 53,954.21

Southern Branch—Cafeteria 43,479.68

\$348,131.57

Various:

Overs and Shorts in Cash \$344.51

Interest on Berkeley Real Estate Investments—(Transfer
from Permanent Building Fund to Endowment In-
come to make income equal to 5 per cent on the
valuation of \$83,405,68) 2,538.88

Pensions—Carnegie Institution 29,514.72

Retiring Allowances (General Funds) 7,588.92

Building Bonds Overdraft—

Additional charge caused by assessments paid on Kennedy
Mining and Milling Co. stock and corresponding in-
crease in Doe Library Fund 780.00

Hotel Rafael Maintenance 248.54

Whitaker Forest Expenses 81.25

Bancroft Library—Adjustment Asset Account 5.00

41,101.32

\$389,232.89

[Schedule No 15]

PAYMENTS TO BENEFICIARIES OF TRUST FUNDS, ETC.

Payments to Secretaries:

Alumnae Y. W. C. A. of University of California	\$29.99	
Alumni Life Membership	34.33	
Class of 1909 Endowment	30.75	
Class of 1909 Loan	36.24	
Class of 1910 Endowment	228.51	
Class of 1911 Fund	261.89	
Class of 1911 Loan	53.88	
Class of 1912 Fund	157.31	
Class of 1913 Fund	221.39	
Class of 1915 Fund	51.25	
Class of 1916 Fund	143.81	
Class of 1917 Endowment	341.21	
Class of 1919 Endowment	169.66	
Y. W. C. A. Endowment	324.99	
		<hr/> \$2,085.21

Direct Charges against Income on Funds:

Therese F. Colin European Fellowship Fund, No. 2:

Payment of income to Lucie F. Hopkins \$60.06

Cora Jane Flood Endowment:

Water bills—Bear Gulch Water Co. 3,222.47

Howison Fund:

Expenses 95.25

Hilgard Fund:

Expenses 102.61

Della H. Leffin Endowment:

Legal Expenses 10.28

Searles Endowment:

Legal Expenses \$32.38

Expenses—Alameda Marsh Lands 475.00

507.38

Barbara Weinstock Lectureship:

Legal Expenses 16.45

4,014.50

Annuities:

Hilgard Fund (Alice Rose Hilgard) \$2,400.00

Howison Fund (Lois T. Howison) 2,700.00

5,100.00

\$11,199.71

[Schedule No. 16]

ADDITIONS TO ENDOWMENT FUNDS

Gifts for Endowment as per Schedule No. 7c	\$773,361.00
Income from Investments added to Funds:	
Alumni Life Membership Fund	\$759.46
Alumni Hall Fund	761.41
Associated Women Student's Fund	71.15
Philo Sherman Bennett Prize Fund	42.58
Edward Booth Loan Fund	7.52
John Burns Loan Fund	1.58
Class of 1881 Loan Fund	23.44
Class of 1886 Loan Fund	135.03
Class of 1895 Loan Fund	16.22
Class of 1897 Loan Fund	32.80
Class of 1898 Loan Fund	3.79
Class of 1903 Loan Fund	26.86
Class of 1908 Endowment Fund	12.57
Edith Claypole Memorial Research Fund	152.79
P. Chas. Cole Scholarship Fund	94.88
Emily Chamberlain Cook Prize Fund	19.94
E. A. Denicke Loan Fund	402.16
Dental Endowment Fund	413.59
F. W. Dohrmann Memorial Loan Fund	296.91
Dolbeer Scholarship Fund	521.29
Grubstake "W" Loan Fund	10.17
Hearst Publication Fund	337.08
Hindusthanee Loan Fund	4.82
Loan Fund No. 3	2.14
Medal Loan Fund	5.02
Memorial Gift Fund—Class of 1916	258.88
Men's Dormitory Fund	32.38
Mining Students' Loan Fund	184.64
Nalanda Loan Fund	1.06
Napa Seminary Loan Fund	14.56
Parker Memorial Loan Fund	36.95
Prytanean Fund (Students' Union)	24.27
Prytanean Fund (Housing Facilities)	76.49
Prytanean Fund (Hospital)	18.03
Ralph D. Robertson Memorial Loan Fund	3.64
Herman Royer Endowment Fund	322.46
San Joaquin Women's Club Loan Fund .....	.96
Jane K. Sather Fund—Awaiting Distribution	166.97
Jane K. Sather Classical Chair Fund	4,197.05
Scripps Institution—Agassiz Fund	369.57
Scripps Retirement Fund	113.65
Snell Seminary Memorial Loan Fund	1.74
Special Senior Class Loan Fund	3.07
Students' Coöperative Society Fund	666.36
	<hr/>
	11,327.89
Carried forward	\$10,647.93 \$773,361.00

[Schedule No. 16—Continued]

Forward	\$10,647.93	\$773,361.00
Twenty-two Fifty-seven Endowment Fund .....	.50	
Walcott Loan Fund	17.78	
F. J. Walton Memorial Loan Fund	486.52	
Women's Dormitory Fund	171.90	
Xi Psi Phi Loan Fund	3.26	
		11,327.89
Miscellaneous Income added to Funds:		
Class of 1881 Loan Fund—		
Payment of note previously written off	\$100.00	
Doe Library Fund—		
Increase to equal assessments on stock	780.00	
Dohrmann Memorial Loan Fund—		
Transfer of balance in Donation Account for salary of R. R. Pinger	137.91	
Kearney Bequest—		
Increase to equal increase in Fixed Assets of Kearney Vineyard	31,045.40	
Scripps Institution "Agassiz" Fund—		
Transfer of net receipts from sale of boat "Agassiz"....	6,450.09	
Federal Endowment Fund—		
Adjustment of cash received from sale of Congressional Land in Yuba County in May, 1916	1,249.35	
Gains in Endowment Pool Investment—		
Transferred to University Endowment Fund	2,186.84	
		41,949.59
		<u>\$826,638.48</u>

[Schedule No. 17]

INCOME AND EXPENDITURES PRIOR TO JUNE 30, 1920,
BROUGHT FORWARD

Income:

Fund Income Accounts—Balance Sheet Schedule "O"....	\$120,442.85	
Fund Income Accounts—Balance Sheet Schedule "R"....	2,515.11	
		\$122,957.96
Donation Accounts—Balance Sheet Schedule "P"		182,744.04
Balances for Specific Purposes—Balance Sheet Schedule "Q"	\$169,090.65	
Less: Bond Interest	\$24,922.50	
Doctors' Thesis Deposits	875.00	
Key Deposits	1,123.73	
Dentistry Fees and Deposits	977.50	
Infirmary Operations and Dental Work	7,341.03	
Plan Deposits	243.00	
Summer Session Civil Engineering Commissary, 1919	18.78	
Summer Session Civil Engineering Commissary, 1920	399.04	
		35,900.58
		133,190.07
Agriculture		571.99
Permanent Building Fund		60,934.25
		\$500,398.31

Expenditures:

Departmental and Other Expenses brought forward as per Balance Sheet Schedule "I," 1919-20	\$340,756.66	
Less: Suspense Account, Nurses Home, University Hospital	\$158.27	
Sale of Tethelin	32.56	
Suspense Account, Commission on Lease (Oakland)	13,014.50	
Suspense Account, Commission on Lease (Sutter Street, San Francisco).....	1,012.50	
Suspense Account, Commission on Lease (Sutter Street, San Francisco).....	2,587.50	
Expenditures on Account 1920-1921 Appropriations	19,843.67	
		36,649.00
		304,107.66
Boalt Hall Subscriptions		6,544.20
Federal Council of Defense		187.20
Hooper Foundation—Advances for Maintenance of Laboratory		251,493.79
Radium Loan—Medical School and Hospitals		42,332.40
Scientific Research		526.55
Pensions—Carnegie Institution		1,899.96
		\$607,091.76

[Schedule No. 18]

INCOME AND EXPENDITURES PRIOR TO JUNE 30, 1921,
CARRIED FORWARD

Income:

Fund Income Accounts—Balance Sheet Schedule "O"....	\$104,819.71	
Fund Income Accounts—Balance Sheet Schedule "R"....	1,111.80	
		\$105,931.51
Donation Accounts—Balance Sheet Schedule "P"		591,240.32
Balances for Specific Purposes—Balance Sheet Schedule "Q"	\$162,058.20	
Less: Doctors' Thesis Deposits	\$1,275.00	
Key Deposits	1,194.98	
Summer Session Civil Engineering Commissary, 1920	10.19	
Summer Session Civil Engineering Commissary, 1921	85.84	
Deposit on Lease—Hyde Street Prop- erty, San Francisco	262.64	
Infirmary Operations and Dental Work	7,914.97	
Plan Deposits	263.00	
	11,006.62	
		151,051.58
Permanent Building Fund		19,874.47
		<u>\$868,097.88</u>

Expenditures:

Departmental and Other Expenses carried forward as per Balance Sheet Schedule "I"	\$230,031.43	
Less: Sale of Santa Monica Forestry Station	\$425.00	
Sale of Tethelin	106.44	
Summer Session, Los Angeles, Income 1921	885.57	
Suspense Account, Commission on Lease (Oakland—Mott)	12,727.50	
Suspense Account, Commission on Lease (Sutter Street, San Francisco— McGee)	931.50	
Suspense Account, Commission on Lease (Sutter Street, San Francisco— H. W. Co.)	2,380.50	
Expenditures on Account 1921-1922 Appropriations	42,979.68	
	60,436.19	
		\$169,595.24
Boalt Hall Subscriptions		6,544.20
Hooper Foundation—Advances for Maintenance of Laboratory		296,304.42
Radium Loan—Medical School and Hospitals		42,332.40
		<u>\$514,776.26</u>

STATISTICS OF THE INFIRMARY

COMPILED BY THE UNIVERSITY PHYSICIAN

INFIRMARY SUMMARIES

August 13, 1920 to May 11, 1921

DISPENSARY

	Men	Women	Total
Individuals treated.....	2,820	2,185	5,005
Number of treatments.....	24,921	16,192	41,113
Number of diagnoses.....	4,815	4,061	8,876
Number of smallpox vaccinations.....	507	545	1,052
Number of students entitled treatment during year.....			10,887
Number of days open.....			273
Average number patients treated daily.....			150.6
Average number treatments per patient.....			8.2
Percentage of students treated.....			46%

HOUSE PATIENTS

Discharged—	Men	Women	Total
Well.....	609	360	969
Relieved.....	84	63	147
Not relieved.....	4	4	8
Deceased.....	4	0	4
Total number of Infirmary days.....			4,765
Number of days open.....			273
Total number of diagnoses.....			1,124
Total number of individuals.....			899
Students in Infirmary more than once during year.....			166
Average stay in days.....			5.3
Average number of patients per day.....			5.3
Largest number patients in one day.....			40
Surgical cases.....			292
Operations.....			249
Anaesthesia (general).....			185
Patients examined by X-ray.....			520
Prescriptions.....			947

DENTAL DEPARTMENT

Gold fillings—inlay.....	87
Gold fillings—malletted.....	104
Amalgam fillings.....	579
Synthetic fillings.....	251
Cement fillings.....	51
Temporary fillings.....	252

Prophylaxis.....	365
Extractions.....	301
Root canal fillings.....	31
X-rays.....	421
Pulp removals.....	10
Miscellaneous treatments.....	124
Pulp capping.....	15
Root amputations.....	8
Removal impacted molars.....	18
Reset.....	9
Wisdom teeth, gum lanced.....	9
Broken appointments.....	52
Abscess lanced.....	5

LABORATORY REPORTS

Urine analyses.....	1,560
Nose and throat cultures.....	555
Sputum.....	100
Blood counts.....	683
Feces and stomach.....	32
Urethral and prostatic smears.....	157
Wassermanns.....	76
Miscellaneous.....	72

INFIRMARY REPORT, 1920-21

MEN AND WOMEN

I. GENERAL DISEASES: (International Classification)	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
1B. Anti-typhoid inoculation.....	74	3	77	..	....	....
4. Malaria.....	....	....	....	1	....	1
6. Measles.....	....	....	....	3	....	3
7. Scarlet fever.....	1	....	1	4	2	6
9. Diphtheria and croup—						
Diphtheria.....	1	1	2	2	3	5
Diphtheria carrier.....	8	6	14	8	10	18
10. Influenza.....	1	2	3	....	4	4
19. Other epidemic diseases—						
Chicken pox.....	6	1	7	11	6	17
Mumps.....	17	13	30	39	21	60
Vaccination—						
Vaccinia.....	352	294	646	2	....	2
Vaccinoid.....	63	90	153	....	....	....
28. Tuberculosis of the lungs.....	4	4	8	2	6	8
45. Cancer and other malignant tumors of other organs—						
c. Epithelioma of face.....	1	....	1	....	....	....
46. Other tumors—						
Tumor of—						
Breast.....	....	....	....	....	1	1
Neck.....	4	2	6	2	....	2
Nose.....	5	....	5	....	....	....
Sebaceous.....	8	3	11	....	1	1
Mole.....	3	....	3	....	....	....

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
47. Acute articular rheumatism.....	3	....	3	1	1	2
54. Anaemia.....	1	4	5	....	1	1
68. Other forms of mental alienation—						
Constitutional inferiority.....	2	....	2	....	....	....
73. Neuralgia and neuritis—						
Hysteria.....	....	....	....	....	5	5
Neuralgia.....	6	4	10	2	....	2
Neuritis.....	2	2	4	....	....	....
Pleurodynia.....	1	....	1	....	....	....
74. Other diseases of the nervous system—						
Neurotic oedema.....	....	....	....	1	....	1
Angiospastic oedema.....	....	5	5	....	1	1
Neurasthenia.....	7	1	8	2	3	5
Syncope.....	1	1	2	....	....	....
Singultus.....	6	....	6	....	....	....
75. Diseases of the eyes and their adnexa—						
a. Conjunctivitis—						
Acute.....	9	18	27	2	2	4
Chronic.....	22	7	29	2	....	2
c. Other diseases of the eye and their adnexa—						
Simple hyperopic.....	32	20	52	....	....	....
Compound hyperopic.....	29	10	39	....	....	....
Simple myopia.....	8	11	19	....	....	....
Compound myopia.....	15	8	23	....	....	....
Mixed astigmatism.....	18	14	32	....	....	....
Blepharitis.....	7	....	7	....	....	....
Chalazion.....	8	2	10	....	....	....
Foreign body.....	18	8	26	....	1	1
Hordeolum.....	46	30	76	....	....	....
Hyperopia.....	12	11	23	....	....	....
Iritis.....	6	....	6	1	....	1
Myopia.....	8	6	14	....	....	....
Subconjunctival hemorrhage.....	4	2	6	....	....	....
76. Diseases of the ears—						
Cerumen, accumulation of.....	65	61	126	....	....	....
Haematoma of ear.....	13	2	15	....	....	....
Myringitis.....	10	1	11	1	....	1
Otitis media, acute.....	11	9	20	7	2	9
III. DISEASES OF THE CIRCULATORY SYSTEM—						
Dilation of heart.....	....	....	....	1	....	1
Mitral insufficiency.....	1	2	3	2	2	4
83. Diseases of the veins—						
Haemorrhoids.....	21	4	25	1	....	1
Haemorrhoids, operation for.....	....	....	....	1	....	1
Varicocele.....	2	2	4	....	....	....
Varicose veins.....	....	2	2	....	....	....
Varicose veins, operation for.....	....	....	....	1	....	1
84. Diseases of the lymphatic system—						
Adenitis.....	11	8	19	....	3	3
Cervical.....	3	2	5	....	....	....
Lymphadenitis.....	2	3	5	1	3	4

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
85. Haemorrhage—						
Epistaxis.....	2	2	4	....	....	....
Palpitation.....	2	....	2	....	....	....
IV. DISEASES OF THE RESPIRATORY SYSTEM—						
86. Diseases of the nasal fossae—						
Adenoids.....	10	9	19	....	....	....
Adenoids, operation for.....	....	....	....	8	9	17
Catarrh, tubotympanic.....	....	2	2	....	....	....
Deviated septum.....	16	15	31	....	....	....
Deviated septum, submucous resection for.....	....	....	....	19	10	29
Polypus, operation for .....	....	1	1	1	....	1
Turbinate.....	10	4	14	....	....	....
Turbinate, operation for.....	6	3	9	5	4	9
Rhinitis.....	1202	757	1959	18	17	35
87. Diseases of the larynx—						
Laryngitis.....	51	69	120	2	4	6
88. Diseases of the thyroid body—						
Hyperthyroidism.....	1	1	2	....	5	5
89. Acute bronchitis—						
Bronchitis.....	26	4	30	12	....	12
Tracheitis.....	425	207	632	42	26	68
90. Chronic bronchitis.....	4	....	4	2	....	2
91. Bronchopneumonia.....	....	2	2	6	....	6
92. Pneumonia—						
Pneumonia, lobar.....	1	....	1	....	3	3
93. Pleurisy.....	3	6	9	10	....	10
96. Asthma.....	5	3	8	3	2	5
98. Other diseases of the respiratory system—						
Hayfever.....	1	1	2	....	....	....
V. DISEASES OF THE DIGESTIVE SYSTEM—						
99. Diseases of the mouth and adnexa—						
Gingivitis.....	2	2	4	2	....	2
Extraction of teeth.....	....	....	....	4	4	8
b. Other diseases of the mouth and adnexa—						
Stomatitis.....	4	9	13	....	1	1
Ulcer of mouth.....	4	1	5	....	....	....
100. Diseases of the pharynx—						
Amygdalitis.....	161	109	270	32	26	58
Amygdalitis, operation for.....	....	....	....	65	44	109
Pharyngitis.....	752	510	1262	109	46	155
100. Vincents angina.....	2	8	10	....	....	....
103. Other diseases of the stomach—						
Fermentation, gastric.....	12	6	18	....	....	....
Gastritis, acute.....	7	....	7	....	....	....
Visceroptosis.....	....	3	3	....	....	....
105. Diarrhoea and enteritis—						
a. Ulcer of duodenum.....	1	....	1	2	....	2
Enteritis.....	17	....	17	7	1	8

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Fermentation, intestinal.....	2	2	4	....	....	....
Gastroenteritis.....	16	1	17	4	....	4
Indigestion.....	1	....	1	....	....	....
107. Intestinal parasites—						
Diarrhoea.....	3	....	3	....	....	....
Tape worm.....	2	....	2	....	....	....
Dysentery.....	3	....	3	....	....	....
Amebic dysentery.....	4	4	8	2	1	3
Amebic dysentery carrier.....	5	1	6	....	....	....
IV. APPENDICITIS—						
108. Appendicitis, acute.....	8	....	8	13	4	17
Appendicitis, chronic.....	3	3	6	7	1	8
Appendicitis, operation for.....	....	....	....	20	6	26
109. Hernias—						
Hernia, inguinal.....	10	1	11	9	....	9
110. Diseases of the intestine—						
a. Enteroptosis.....	....	....	....	....	....	....
Fistula, in ano, operation for.....	5	2	7	3	1	4
Proctitis.....	....	....	....	....	....	....
b. Other diseases of the intestines—						
Autointoxication.....	5	....	5	....	....	....
Constipation.....	79	25	104	8	....	8
111. Acute yellow atrophy of the liver—						
Jaundice.....	4	1	5	4	....	4
117. Subluxation or dislocation of—						
Cartilage.....	8	....	8	....	....	....
VI. NON-VENEREAL DISEASES OF THE GENITO- URINARY SYSTEM AND ADNEXA—						
119. Acute nephritis—						
Nephritis, acute.....	3	1	4	1	2	3
120. Bright's disease—						
Albuminuria.....	1	....	1	....	....	....
122. Other diseases of the kidneys and adnexa—						
Pyelitis.....	1	....	1	....	1	1
Cystitis, acute.....	3	2	5	3	1	4
125. Diseases of the urethra—						
Urethritis, acute.....	4	....	4	2	....	2
Non-specific.....	12	1	13	....	....	....
126. Diseases of the prostate—						
Prostatitis—						
Chronic.....	1	....	1	....	....	....
Acute.....	2	....	2	....	....	....
127. Non-venereal diseases of the male genital organs—						
Balanoposthitis.....	9	....	9	....	....	....
Epididymitis.....	1	....	1	1	....	1
Orchitis.....	....	....	....	4	....	4
Phimosis.....	....	....	....	5	....	5
Seminal emissions.....	1	....	1	....	....	....

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

		Dispensary Patients			House Patients		
		Men	Women	Total	Men	Women	Total
128.	Uterine haemorrhage—						
	Metrorrhagia.....	....	24	24	....	....	....
130.	Other diseases of the uterus—						
	Endocervicitis.....	....	1	1	....	....	....
	b. Other diseases of the uterus—						
	Amenorrhoea.....	....	33	33	....	....	....
	Dysmenorrhoea.....	....	32	32	....	2	2
	Leucorrhoea.....	....	2	2	....	....	....
VII. THE PUERPERAL STATE—							
134.	Accidents of pregnancy—						
	Pregnancy.....	....	4	4	....	....	....
VIII. DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE—							
	Carbuncle of—						
	Neck.....	3	....	3	1	....	1
	Furuncle of—						
	Abdomen.....	1	....	1	....	....	....
	Arm.....	29	9	38	....	....	....
	Axilla.....	1	1	2	....	....	....
	Back.....	15	2	17	....	....	....
	Breast.....	....	1	1	....	....	....
	Buttock.....	8	9	17	....	....	....
	Chest.....	1	1	2	....	....	....
	Ear.....	9	8	17	....	....	....
	Eyelid.....	2	5	7	....	....	....
	Face.....	25	31	56	2	....	2
	Finger.....	6	2	8	....	....	....
	Forearm.....	6	1	7	....	....	....
	Foot.....	3	4	7	....	....	....
	Forehead.....	3	4	7	....	....	....
	Hand.....	7	1	8	....	....	....
	Leg.....	8	5	13	....	....	....
	Lip.....	3	....	3	2	....	2
	Neck.....	109	6	115	2	....	2
	Cheek.....	4	....	4	....	....	....
	Chin.....	25	7	32	....	....	....
	Nose.....	21	6	27	....	....	....
	Penis.....	2	....	2	1	....	1
	Scalp.....	9	....	9	....	....	....
	Shoulder.....	3	2	5	....	....	....
	Thigh.....	16	4	20	2	....	2
	Wrist.....	2	....	2	1	....	1
	Miscellaneous.....	59	11	70	2	1	3
144.	Acute abscess—						
	Abscess of—						
	Arm.....	8	4	12	1	....	1
	Coccyx.....	1	....	1	....	....	1
	Face.....	2	1	3	1	....	1

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Finger.....	6	3	9	....	....	....
Foot.....	4	1	5	....	....	....
Head.....	1	....	1	....	....	....
Heel.....	....	1	1	....	....	....
Leg.....	1	....	1	....	....	....
Peri-tonsillar.....	3	....	3	2	....	2
Toe.....	3	4	7	1	....	1
Thigh.....	2	....	2	....	....	....
144. Acute abscess, continued—						
Cellulitis of—						
Ankle.....	4	1	5	1	1	2
Arm.....	26	2	28	1	....	1
Ear.....	3	....	3	....	....	....
Face.....	3	1	4	1	1	2
Finger.....	24	11	35	2	2	4
Foot.....	14	5	19	1	4	5
Hand.....	6	4	10	1	1	2
Heel.....	7	5	12	2	....	2
Knee.....	3	1	4	....	....	....
Leg.....	3	4	7	1	....	1
Nail.....	2	....	2	....	....	....
Thumb.....	8	1	9	....	....	....
Toe.....	8	4	12	1	....	1
145. Other diseases of the skin and adnexa—						
a. Trichophytosis.....	143	28	171	....	....	....
b. Scabies.....	42	28	70	....	....	....
c. Other diseases of the skin and adnexa—						
Acne.....	81	78	166	1	....	1
Alopecia areata.....	1	2	3	....	....	....
Clavus.....	15	33	48	....	....	....
Comedo.....	....	4	4	....	....	....
Dermatitis.....	15	21	36	1	....	1
Dermatitis venenata.....	161	144	305	13	9	22
Eczema.....	102	35	137	2	....	2
Erythema.....	1	5	6	2	....	2
Erythema, multiform.....	2	....	2	....	....	....
Herpes.....	37	15	52	....	....	....
Herpes, zoster.....	9	7	16	....	....	....
Hyperidrosis.....	4	....	4	....	....	....
Ichthyosis.....	2	....	2	....	....	....
Impetigo contagiosa.....	86	25	111	....	....	....
Molluscum.....	5	....	5	....	....	....
Parasitic diseases—						
Pediculi.....	6	2	8	....	....	....
Pernio.....	11	7	18	....	....	....
Pityriasis rosea.....	11	4	15	....	....	....
Pruritis ani.....	8	....	8	....	....	....
145c. Parasitic diseases Cont.—						
Seborrhea.....	31	48	79	....	....	....
Urticaria.....	43	36	79	....	1	1

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Wart of—						
Ankle.....	2	....	2	....	....	....
Face.....	9	1	10	....	....	....
Finger.....	12	12	24	....	....	....
Foot.....	86	18	104	1	5	6
Hand.....	42	15	57	....	....	....
Neck.....	2	1	3	....	....	....
Wrist.....	5	....	5	....	....	....
Nails—						
Ingrowing nail.....	24	4	28	....	....	....
Paronychia.....	17	6	23	....	....	....
Ingrowing hair.....	2	....	2	....	....	....
Blister of—						
Foot.....	38	1	39	1	....	1
Heel.....	6	3	9	....	....	....

IX. DISEASES OF THE BONES AND OF THE

ORGANS OF LOCOMOTION—

146. Diseases of the bones—						
Ethmoid sinusitis.....	3	3	6	....	....	....
Frontal sinusitis.....	17	3	20	....	....	....
147. Diseases of the joints—						
Arthritis.....	44	15	59	....	....	....
Synovitis.....	17	....	17	3	....	3
149. Other diseases of the organs of locomotion—						
Bursitis.....	7	13	20	....	....	....
Faulty statics.....	6	....	6	....	....	....
Ganglion.....	4	5	9	....	....	....
Hallux valgus.....	9	4	13	....	....	....
Metatarsalgia.....	3	9	12	....	....	....
Myalgia.....	2	1	3	....	....	....
Myositis.....	10	5	15	1	2	3
Pes planus.....	57	28	85	....	....	....
Pronated feet.....	4	8	12	....	....	....
Tenosynovitis.....	9	4	13	....	1	1
Torticollis.....	2	5	7	....	....	....
Weak feet.....	5	....	5	....	....	....

X. MALFORMATIONS—

Naevus.....	3	1	4	....	....	....
Congenital fistula.....	....	1	1	....	1	1
Sacro iliac.....	5	2	7	1	1	2

XIII. AFFECTIONS PRODUCED BY EXTERNAL

CAUSES—

a. Venomous bites and stings—

Insect sting.....	20	18	38	4	....	4
167. Burns—						
Burn of—						
Arm.....	9	8	17	1	1	2
Eye.....	5	1	6	....	....	....
Face.....	8	1	9	2	....	2

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Finger.....	7	3	10	....	....	....
Foot.....	....	1	1	....	....	....
Hand.....	4	7	11	1	1	2
Mouth.....	2	1	3	....	....	....
Neck.....	2	3	5	....	....	....
Shoulder.....	1	....	1	....	....	....
Thigh.....	....	3	3	....	....	....
Wrist.....	1	4	5	....	....	....
168B. Absorption of deleterious gases—						
Nitrous oxide poisoning.....	1	....	1	1	....	1
171. Traumatism by cutting or piercing instruments—						
Arm.....	9	2	11	....	....	....
Chin.....	5	....	5	....	....	....
Eyebrow.....	7	....	7	....	....	....
Eyelid.....	2	1	3	....	....	....
Finger.....	59	17	76	....	....	....
Foot.....	8	....	8	....	....	....
Hand.....	23	4	27	....	....	....
Head.....	18	....	18	1	....	1
Hip.....	4	....	4	1	....	1
Knee.....	6	1	7	....	....	....
Lip.....	6	....	6	....	....	....
Nose.....	2	....	2	....	....	....
Leg.....	4	1	5	....	....	....
Toe.....	3	....	3	....	....	....
Thumb.....	9	1	10	....	....	....
Wrist.....	9	1	10	....	....	....
176. Injuries by animals—						
Dog bite.....	2	1	3	....	....	....
Rat bite.....	1	....	1	....	....	....
185. Fractures—						
a. Dislocation of—						
Arm.....	4	1	5	1	1	2
Ankle.....	4	....	4	....	....	....
Clavicle.....	2	....	2	....	....	....
Colles.....	3	....	3	....	....	....
Elbow.....	3	....	4	1	1	2
Finger.....	11	....	11	....	....	....
Leg.....	1	1	2	....	....	....
Patella.....	3	1	4	1	1	2
Sacro iliac.....	3	....	3	....	....	....
Shoulder.....	13	....	13	....	....	....
Wrist.....	2	....	2	....	....	....
b. Sprain of—						
Ankle.....	73	75	148	8	4	12
Arch.....	7	5	12	....	....	....
Elbow.....	7	4	11	....	1	1

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Finger.....	12	2	14	....	....	....
Foot.....	8	8	16	....	....	....
Hand.....	6	3	9	....	....	....
Knee.....	12	7	19	2	1	3
Sacro iliac.....	....	4	4	....	....	....
Shoulder.....	2	2	4	....	....	....
Thumb.....	22	6	28	....	....	....
Toe.....	6	1	7	....	....	....
Wrist.....	26	16	42	....	1	1
Miscellaneous.....	8	4	12	....	....	....
c. Fracture of—						
Finger.....	11	....	11	....	....	....
Jaw.....	1	....	1	....	....	....
Leg.....	1	1	2	8	1	9
Nose.....	3	....	3	....	....	....
Skull.....	....	....	....	....	....	....
Wrist.....	2	....	2	....	....	....
186. Other external violence—						
I. Strain of muscle of—						
Abdomen.....	4	....	4	....	....	....
Achilles tendon.....	4	4	8	....	....	....
Ankle.....	10	17	27	....	....	....
Arch.....	16	14	30	....	....	....
Arm.....	....	1	1	....	....	....
Back.....	11	11	22	....	....	....
Chest.....	11	....	11	1	....	1
Elbow.....	2	....	2	....	....	....
Eye.....	....	1	1	....	....	....
Finger.....	2	2	4	....	....	....
Foot.....	19	30	49	....	....	....
Knee.....	12	10	22	....	....	....
Leg.....	8	....	8	....	....	....
Neck.....	6	2	8	....	....	....
Sacro iliac.....	....	4	4	....	....	....
Shoulder.....	11	5	16	....	....	....
Thigh.....	6	1	7	....	....	....
Wrist.....	4	....	4	....	....	....
Miscellaneous.....	6	3	9	....	....	....
186. Other external violence, Cont.—						
II. Regions—						
Concussion of—						
Brain.....	....	....	....	2	....	2
Spine.....	....	1	1	....	....	....
Contusion and abrasion of—						
Abdomen.....	....	1	1	....	1	1
Ankle.....	4	2	6	....	....	....
Arm.....	7	4	11	....	....	....
Back.....	14	2	16	....	....	....
Cheek.....	1	....	1	....	....	....
Chest.....	5	....	5	....	....	....
Chin.....	3	2	5	....	....	....

INFIRMARY REPORT, 1920-21—(Continued)

MEN AND WOMEN

	Dispensary Patients			House Patients		
	Men	Women	Total	Men	Women	Total
Elbow.....	36	8	44	....	....	....
Eye.....	3	....	3	....	....	....
Face.....	5	2	7	....	....	....
Finger.....	41	32	73	1	....	1
Foot.....	35	9	44	....	....	....
Hand.....	30	13	43	....	....	....
Head.....	7	4	11	1	....	1
Heel.....	30	43	73	3	....	3
Hip.....	1	1	2	....	....	....
Knee.....	33	14	47	....	1	1
Leg.....	19	1	20	....	....	....
Lip.....	4	2	6	1	....	1
Nail.....	1	....	1	....	....	....
Nose.....	7	2	9	....	....	....
Shoulder.....	2	....	2	....	....	....
Thigh.....	9	....	9	....	....	....
Toe.....	37	2	39	2	....	2
Wrist.....	4	3	7	....	....	....
Punctured wound of—						
Foot.....	7	....	7	1	....	1
Hand.....	4	....	4	....	....	....
Knee.....	2	2	4	....	....	....
Eye.....	....	1	1	....	....	....
Foreign body of—						
Arm.....	1	....	1	....	....	....
Ear.....	2	....	2	....	....	....
Eye.....	17	7	24	....	....	....
Finger.....	3	3	6	....	....	....
Hand.....	5	2	7	....	....	....
Throat.....	1	....	1	....	....	....
Under finger nail.....	3	....	3	....	....	....

XIV. ILL-DEFINED DISEASES—

189. Unclassified or ill-defined—

a. Disease not specified or ill-defined—

Headache.....	15	30	45	1	1	2
Insomnia.....	8	5	13	....	....	....

b. No disease; feigned disease—

No disease.....	63	19	82	18	8	26
No diagnosis.....	15	21	36	5	7	12
Post operation.....	3	....	3	1	1	2

STATISTICAL ADDENDA

COMPILED BY THE RECORDER OF THE FACULTIES

TABLE 1.—Summaries of officers of instruction in the colleges at Berkeley, 1901-1921.

Year	Professors		Assoc. Profs.	Asst. Profs.	Lectrs.	Instrs.	Dept. Assts.*	Teaching Fellows	Total
	Acting Profs.	Emer. Profs.							
1901-1902	29	1	13	22	5	56	43	0	169
1902-03	34	1	12	26	14	64	48	4	203
1903-04	36	2	14	42	14	51	60	3	222
1904-05	39	1	16	48	16	45	86	3	254
1905-06	37	3	18	51	14	55	82	3	263
1906-07	40	3	19	57	14	46	94	3	276
1907-08	44	3	22	59	12	47	104	4	295
1908-09	50	3	28	62	14	53	100	6	316
1909-10	55	8	23	70	14	52	118	7	347
1910-11	47	10	29	64	14	57	75	7	303
1911-12	48	9	42	57	18	81	110	9	374
1912-13	55	8	38	61	17	77	121	16	393
1913-14	72	6	33	82	16	87	114	14	424
1914-15	73	10	43	95	20	83	169	16	509
1915-16	68	10	50	78	20	83	168	26	503
1916-17	71	10	47	83	25	83	178	24	521
1917-18	84	8	53	88	28	85	224	24	594
1918-19	75	10	56	103	32	109	168	30	583
1919-20	111	10	53	88	31	96	98	38	525
1920-21	112	11	62	93	28	54	176	58	594

*Including readers.

TABLE 2.—Officers of instruction in the colleges and departments away from Berkeley.

Year	L.O.	Art	Law	Medicine		P. G. Medicine	Dentistry	Pharm.	†Agri- culture
				S.F.	L.A.				
1901-1902	11	8	5	81	....	101	50	11	....
1902-03	12	9	5	50	....	109	46	10	....
1903-04	13	10	6	62	....	28	24	9	....
1904-05	13	9	6	55	....	23	25	8	....
1905-06	9	9	6	66	....	....	22	8	....
1906-07	7	....	6	52	....	....	34	9	....
1907-08	7	11	6	54	....	....	34	8	....
1908-09	8	7	6	54	....	....	31	8	....
1909-10	7	7	6	58	59	....	26	8	....
1910-11	16	9	6	55	61	....	32	8	10
1911-12	16	10	6	55	61	....	31	7	14
1912-13	17	12	6	53	58	....	24	9	....
1913-14	12	8	8	70	58	....	25	9	12
1914-15	14	8	8	80	145	....	25	8	23
1915-16	12	8	6	98	not reported	....	29	10	24
1916-17	14	13	8	142	121	....	37	7	29
1917-18	14	12	8	159	42	....	39	9	39
1918-19	18	14	9	178	75	....	54	10	58
1919-20	16	11	9	184	169	....	47	7	35
1920-21	17	12	9	201	217	....	65	9	31

NOTE.—Officers of instruction in the Hooper Foundation included in the S. F. Medical School.

†Beginning 1918-19 includes University and Farm School courses at Davis and at other outlying departments, including the Graduate School of Tropical Agriculture at Riverside. Before 1918-19, the University Farm only.

Note.—The upper figures on the left of each group refer to men, the lower to women; the figures on the right are totals.
The following table does not include students in the following courses of instruction: University Extension, California School of Fine Arts, The University Farm School, Short Courses in Agriculture, Correspondence Courses, Farmers' Institutes, Wilmerding School of Industrial Arts, Teachers' Curricula (Southern Branch, Los Angeles).

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NOTE.—The upper figures on the left of each group refer to men, the lower to women; the figures on the right are totals.

The following table does not include students in the following courses of instruction: University Extension, California School of Fine Arts, The University Farm School, Short Courses in Agriculture, Correspondence Courses, Farmers' Institutes, Wilmerding School of Industrial Arts, Teachers' Curricula (Southern Branch, Los Angeles).

College or School	1911-12		1912-13		1913-14		1914-15		1915-16		1916-17		1917-18		1918-19		1919-20		1920-21	
IN BERKELEY	311		344		404		459		535		532		377		328		549		604	
Graduate Students:	267	578	304	648	303	707	373	832	477	1012	580	1092	530	907	477	805	548	1097	594	1198
Undergraduates:																				
Letters	64		69		71		79		*											
	104	168	107	176	105	176	114	193												
Social Sciences	342		395		462		575		1455		1586		1160		1436		2387		2334	
	796	1138	911	1306	1035	1497	1296	1871	2232	3687	2364	3950	2599	3759	2785	4221	3709	6096	4126	6460
Natural Sciences	454		566		727		746													
	408	862	511	1077	595	1322	591	1337												
Commerce	263		282		282		298		310		363		273		388		676		994	
	5	268	5	287	14	296	13	311	30	340	27	390	87	360	133	521	176	852	219	1213
Agriculture	350		429		524		532		537		532		333		356		576		573	
	22	372	26	455	28	552	21	553	28	565	14	546	25	358	25	381	37	613	35	608
Mechanics	316		318		366		361		345		328		234		300		656		650	
	0	316	0	318	0	366	0	361	0	345	0	328	0	234	0	300	1	657	3	653
Mining	160		132		122		102		93		126		106		107		232		246	
	0	160	0	132	0	122	0	102	0	93	0	126	0	106	0	107	0	232	0	246
Engineering Unclassified															258					
															1		259			
Civil Engineering	234		224		261		234		196		168		117		151		218		213	
	0	234	0	224	0	261	0	234	0	196	0	168	0	117	0	151	0	218	0	213
Chemistry	56		60		62		69		102		131		139		177		246		250	
	0	56	0	60	3	65	5	74	4	106	6	137	6	145	8	185	5	251	12	271
At Large	29		23		44		3													
	36	65	37	60	46	90	7	10												
Unclassified															57					
															0					
Medicine (1st and 2d years)	27		52		39		42		31		39		65		60		62		46	
	1	28	7	59	7	46	7	49	5	36	1	40	3	68	5	65	6	68	13	59
Jurisprudence									67		83		42		23		88		152	
									2	69	6	80	7	49	2	25	17	105	23	175
Total Undergraduates	2266		2527		2916		3041		3001		3356		2469		3290		5092		5288	
	1336	3602	1567	4094	1787	4703	2054	5095	2285	5286	2418	5774	2727	5196	2953	6243	3911	9003	4401	9689
Total in the Colleges at Berkeley (deducting for duplicates)	2539		2821		3285		3454		3491		3751		2765		3588		5532		5850	
	1573	4112	1846	4667	2064	5349	2394	5848	2706	6197	2944	6695	3248	6013	3395	6983	4435	9967	4946	10,796
Percentage of men, depts. at Berkeley	61.74		60.44		61.41		59.06		56.28		56.02		45.98		51.38		55.50		54.19	
AT MT. HAMILTON: LICK OBSERVATORY	2		0		0		2		2		4		0		2		4		3	
	0	2	0	0	0	0	0	2	0	2	0	4	1	1	2	4	3	7	2	5
AT LA JOLLA: SCRIPPS INSTITUTION FOR BIOLOGICAL RESEARCH															2		2		3	
															0	2	0	2	1	4
IN RIVERSIDE: GRADUATE SCHOOL OF TROPICAL AGRICULTURE									2		0		1		2		1		0	
									0	2	0	0	0	1	0	2	0	1	0	0
IN SAN FRANCISCO: HASTINGS COLLEGE OF THE LAW	117		100		88		71		76		91		37		31		58		79	
	2	119	0	100	0	88	2	73	0	76	8	99	4	41	5	36	3	61	10	89
Medical School (3d and 4th years)	16		17		24		37		49		43		34		62		63		107	
	2	18	3	20	7	31	6	43	9	58	10	53	10	44	10	72	25	88	15	122
College of Dentistry	77		90		93		109		138		170		159		160		231		308	
	1	78	0	90	0	93	2	111	1	139	5	175	7	166	12	172	4	235	20	328
California College of Pharmacy	79		95		113		91		91		89		82		57		92		95	
	1	80	3	98	4	117	4	95	5	96	3	92	5	87	9	66	15	107	24	119
Total in the Colleges in San Francisco	289		302		318		310		364		393		312		310		444		589	
	6	295	6	308	11	329	14	324	15	369	26	419	26	378	36	416	47	491	69	658
IN LOS ANGELES: LOS ANGELES MEDICAL DEPARTMENT	18		7		3				27		46		39		45		53		34	
	1	19	0	7	0	3			1	28	2	48	3	42	0	45	0	53	3	37
Junior College Department																	133		473	
																	117	250	137	910
Total in the University (deducting for dupli)	2812		3128		3606		3764		3876		4190		3109		3947		6166		6944	
	1579	4121	1832	4980	2074	5680	2408	6172	2722	6598	2972	7162	3239	6348	3433	7380	4602	10,768	5430	12,394
SUMMER SESSIONS, 1911-1920	562		676		783		982		1488		1190		868		825		1177		2058	
	1419	1981	1599	2275	1580	2363	2197	3179	3876	5384	2785	3975	3111	3979	4197	5022	3157	4334	4378	6436
Total	3404		3814		4389		4746		5361		5380		3977		4772		7343		9002	
	2998	6402	3451	7255	3654	8043	4605	9351	6598	11,962	5767	11,137	6350	10,327	7630	12,402	7759	15,102	9828	18,830
Deduct for duplicate registrations in Summer Session and in Fall session following			220		299		324		431		423		300		264		344		734	
			183	403	218	517	289	613	355	786	391	814	450	750	503	767	804	1148	497	1231
GRAND TOTAL	6109		3584		4090		4422		4933		4957		3677		4508		6999		8268	
			3268	6852	3436	7526	4316	8738	6243	11,176	5366	10,323	5900	9577	7127	11,635	6955	13,954	9331	17,509

*Beginning 1915-16, the colleges of Letters, Social Sciences, and Natural Sciences were merged into a single college of Letters and Science in the above table. 1911-12 to 1913-14 inclusive, students at large are summarized separately, and are also distributed among the several colleges.

†Total, deducting (49.91) for graduates who received their degrees as undergraduates, December, 1920.

‡Net Total (duplicates deducted) 1920-21, as follows: Juris. 1 L & S '93 3 L & S '48 Special 4 L & S '34 179

§Figures for Medical School include only third and fourth years, figures for first and second years being included in "Students in Berkeley."

graduate and undergraduate

TABLE 4.—Attendance in departments not enumerated in foregoing tables, 1917–1921.

NOTE.—Instruction in the departments herein referred to does not, generally speaking, lead to University degrees.

	1917-18	1918-19	1919-20	1920-21
University Farm School, Davis.....	218	163	727	601
California School of Fine Arts, San Francisco.....	507	460	727	854
*Lick-Wilmerding Schools (boys).....	449	473	502	483
Lick-Lux Schools (girls).....	.....	227	214	226
Teachers' Curricula, Southern Branch.....	.....	.....	1,125	1,236
University Extension				
†Lectures.....	102,500	85,273	107,539	180,000
†Correspondence courses.....	2,456	2,835	3,042	4,110
†Bureau of Class Instruction.....	8,004	7,988	10,750	16,227
†Bureau of Visual Instruction.....	95,000	112,208	.....	.....
University Extension in Agriculture				
†Correspondence.....	34,416	1,760	2,407	1,840
†‡Farmers Meetings.....	205,662	206,475	323,266	427,690
Other Lectures.....	3,565	16,575	18,884	34,660
Agriculture Clubs.....	.....	.....	2,798	2,338

*Before 1917-18 Wilmerding School of Industrial Arts.

†The figures here given represent total attendance during the year, not the number of individuals receiving instruction.

‡Beginning December 1, 1916, annual attendance records for Farmers Meetings are for the twelve-month period, December 1-November 30.

TABLE 5.—Showing proportion (per cent) of the undergraduates, including special students, in each of the colleges at Berkeley.

	1907-08	1908-09	1909-10	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21
Letters.....	5.05	5.07	5.11	5.21	4.66	4.30	3.74	3.80	†					
Social Sciences.....	42.14	39.01	37.52	34.86	31.60	31.90	31.83	36.72	67.82	68.57	72.15	67.83	66.30	66.67
Natural Sciences.....	8.42	10.41	13.54	18.45	23.93	26.31	28.11	26.24						
Commerce.....	6.78	7.03	7.50	7.96	7.44	7.01	6.30	6.11	6.25	6.77	6.42	8.37	9.65	12.52
Agriculture.....	5.05	5.63	6.67	8.48	10.33	11.11	11.74	10.85	10.39	9.47	6.88	6.12	6.87	6.28
Mechanics.....	9.96	10.85	10.19	8.96	8.82	7.77	7.78	7.09	6.35	5.69	4.50	4.82	7.36	6.74
Mining.....	10.65	9.67	8.22	6.33	4.44	3.22	2.59	2.00	1.71	2.18	2.04	1.72	2.60	2.54
Engineering Unclassified.....												4.16		
Civil Engineering.....	9.58	9.11	7.11	7.14	6.49	5.47	5.55	4.59	3.60	2.91	2.25	2.43	2.44	2.20
Chemistry.....	1.49	1.85	1.55	1.72	1.55	1.46	1.38	1.45	1.95	2.37	2.78	2.97	2.81	2.80
Medicine.....	.26	.55	.50	.09	.08	1.44	.98	.96	.66	.69	1.30	1.00	.81	.61
†Unclassified.....												.91		
At Large.....	.53	1.33	1.18	*[2.06]	*[1.80]	*[1.46]	*[1.91]	.19						
Jurisprudence.....									1.27	1.35	.94	.40	1.16	1.81

*In the above table, 1910-11 to 1913-14 inclusive, students at large are summarized separately, and are also distributed among the several colleges according to expressed collegiate preference.

†Beginning 1915-16, the colleges of Letters, Social Sciences, and Natural Sciences were merged into a single college of Letters and Science.

‡S. A. T. C. and N. U. men who did not specify any college.

TABLE 6A.—Summaries of resident students registered to November 1 (approximately), 1912-1921.

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
*A. ACADEMIC COLLEGES:										
<i>a. Berkeley</i>										
Graduates.....	509	535	633	755	863	663	512	709	793	799
Undergraduates.....	3695	4279	4574	4801	5110	4560	5117	7886	8713	8578
Totals.....	4204	4814	5207	5556	5973	5223	5629	8595	9506	9377
<i>b. Los Angeles.....</i>										
Totals.....	4204	4814	5207	5556	5973	5223	5629	8845	10332	10686
*B. PROFESSIONAL SCHOOLS AND COLLEGES.....										
Deducting for Duplicates.....	114	115	127	161	173	91	41	157	220	211
Grand Totals.....	4585	5220	5614	6013	6522	5707	6155	9528	11197	11775
Students in Berkeley Departments.....	4286	4902	5290	5614	6042	5326	5747	8780	9669	9602
Students in San Francisco Departments.....	292	314	324	363	425	334	340	498	656	823
Students in the Los Angeles Departments†.....								250	872	1350
										11775

*In the figures for the years 1912-18, the registration in the School of Jurisprudence is included in A (Academic Colleges) and also in B (Professional Schools); for other years this registration is included only in B (Professional Schools).

†Not including students in Teachers' Curricula.

TABLE 6B.—Graduate students, classified by major departments, November 1, 1921.

NOTE.—In the columns showing the number of students, the upper left-hand figures refer to men, the lower to women; the figures on the right are totals.

Agriculture.....	48 4	50	Irrigation.....	2 0	2
Anatomy.....	1 1	2	Italian.....	0 1	1
Anthropology.....	1 2	3	Jurisprudence, School of.....	118 19	137
Architecture.....	5 0	5	Latin.....	1 14	15
Astronomy.....	6 2	8	Library Practice.....	0 9	9
Bacteriology.....	2 3	5	Mathematics.....	12 21	33
Biochemistry.....	1 2	3	Mechanics.....	10 0	10
Botany.....	3 8	11	Medical School.....	44 13	57
Chemistry.....	53 13	66	Mining.....	7 0	7
Civil Engineering.....	6 0	6	Music.....	0 1	1
Drawing and Art.....	0 8	8	Philosophy and Psychology.....	20 16	36
Economics.....	55 36	91	Physical Education.....	2 6	8
Education.....	64 42	106	Physics.....	18 2	20
English.....	14 71	85	Physiology.....	0 3	3
French.....	9 18	27	Political Science.....	10 5	15
Geography.....	3 0	3	Pre-Med.....	4 0	4
Geological Sciences.....	16 0	16	Public Health.....	2 6	8
German.....	4 2	6	Public Speaking.....	1 5	6
Greek.....	0 2	2	Semitic Languages.....	0 1	1
History.....	19 43	62	Slavic Languages.....	0 3	3
Household Art.....	0 2	2	Spanish.....	6 13	19
Household Science.....	0 10	10	Zoology.....	10 12	22
Hygiene.....	0 1	1	Totals.....	575 420	995

TABLE 6c.—Undergraduate students, academic departments, Berkeley, classified by colleges and classes, November 1 (approximately), 1920 and 1921.

NOTE.—In the columns showing number of students the upper left-hand figures refer to men, the lower to women; the figures on the right are totals.

Colleges	Senior or 4th year		Junior or 3d year		Sophomore or 2d year		Freshman or 1st year		Special		Totals	
	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921	1920	1921
Letters & Science..	487 678 1165	521 760 1281	482 782 1264	547 890 1437	601 984 1585	399 889 1288	503 1154 1657	412 950 1362	65 100 165	61 94 155	2138 5836 3583	1940 5523
Commerce.....	87 20 107	165 32 197	160 40 200	264 59 323	256 71 327	316 59 375	295 90 385	289 52 341	49 3 52	41 1 42	847 224 1071	1075 203 1278
Agriculture.....	115 9 124	132 9 141	130 12 142	111 8 119	122 5 127	99 10 109	129 6 135	87 6 93	19 2 21	17 3 20	515 34 549	446 36 482
Mechanics.....	67 1 68	78 0 78	119 0 119	162 0 162	164 0 164	163 0 163	211 3 214	190 0 190	23 0 23	26 0 26	584 4 588	619 0 619
Mining.....	32 0 32	42 0 42	49 0 49	72 0 72	67 0 67	60 0 60	61 0 61	54 0 54	13 0 13	12 0 12	222 0 222	240 0 240
Civil Engineering..	26 0 26	37 0 37	41 0 41	57 0 57	57 0 57	39 0 39	74 0 74	66 0 66	3 0 3	6 0 6	201 0 201	205 0 205
Chemistry.....	22 0 22	35 0 35	54 1 55	66 5 71	70 6 76	63 4 67	78 6 84	45 4 49	9 0 9	9 0 9	233 13 246	218 13 231
Totals.....	836 708 1544	1010 801 1811	1035 835 1870	1279 962 2241	1337 1066 2403	1139 962 2101	1351 1259 2610	1143 1012 2155	181 105 286	172 98 270	4740 3973 8713	4743 3835 8578

TABLE 6D.—Students in professional colleges and schools, November 1 (approximately), 1912-1921.
(Berkeley and elsewhere).

College or School	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
School of Architecture. (Berkeley)	.....	.....	.....	8 0	5 2	2 0	2 0	0 0	2 0	5 0
School of Jurisprudence. (Berkeley)	110 4	108 7	119 8	149 12	157 16	74 17	18 23	198 31	244 36	284 36
Medical School. (San Francisco and Berkeley)	84 17	100 20	106 22	99 17	115 14	127 18	177 19	177 30	182 31	193 40
Hastings College of the Law. (San Francisco)	96 1	79 0	70 2	70 1	87 6	32 4	37 4	48 4	77 10	99 12
College of Dentistry. (San Francisco)	89 0	90 0	112 0	140 1	173 4	166 7	171 10	226 19	316 20	371 26
California College of Pharmacy. (San Francisco)	85 2	111 3	91 4	88 5	92 3	81 5	52 9	87 20	94 23	161 32
Los Angeles Medical Department. (Los Angeles)	7 0	3 0	.....	27 1	46 2	39 3	45 0	.....	42 4	34 7
Totals.....	471 24	491 30	498 36	581 37	675 47	521 54	502 65	736 104	957 124	1147 153

TABLE 7.—Enrollment of graduate students, 1910-1921.

	1910-11	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19	1919-20	1920-21
Total number of graduate students (duplicates deducted).....	501	578	648	707	832	1014	1092	907	805	1097	1198
Number from University of California.....	258	307	342	371	424	431	563	487	472	658	709
Percentage of graduate students from University of California.....	51.4	53.1	52.8	52.3	51.0	53.7	55.5	53.03	58.63	60.00	59.18
Percentage of graduate students from other institutions.....	48.5	46.9	47.2	47.7	49.0	46.3	44.5	46.97	41.37	40.00	40.82
Total number of colleges and universities represented.....	120	122	152	146	168	207	175	193	135	146	183
*Number of graduate students taking higher degrees (masters' and doctors' degrees, not including juris doctor).....	79	99	103	149	149	172	168	133	114	165	192
*Percentage of graduate students taking higher degrees (masters' and doctors' degrees, not including juris doctor).....	15.7	17.1	15.9	21.1	17.9	16.9	15.4	14.66	14.16	15.04	16.03
Number of graduate students receiving Ph.D.....	6	15	10	14	22	22	33	17	21	23	25
Number of graduate students receiving the bachelor's degree.....	7	7	10	7	3	7	3	2	0	15	23
Number of graduate students taking juris doctor	8	13	11	16	20	22	30	5	10	28	36

*Beginning 1914-15, includes Degrees of Graduate in Architecture, Graduate in Education, Graduate in Public Health, and Electrical Engineer.

TABLE 8.—Degrees conferred, 1913-1921.

DEGREE	1913	1914	1915	1916	1917	1918	1919	1920	1921†
LL.D.....	5 0 5	4 0 4	4 0 4	2 0 2	2 0 2	14 0 14	6 1 7	0 0 0	0 0 0
J.D.....	11 1 12	15 1 16	18 2 20	22 0 22	27 2 29	3 2 5	9 4 13	23 3 26	34 3 37
Ph.D.....	9 2 11	11 2 13	22 4 26	22 0 22	32 3 35	12 3 15	20 4 24	21 5 26	19 6 25
M.A.....	6 16 22	12 26 38	43 46 89	48 65 113	49 74 123	28 53 81	25 67 92	53 67 120	72 91 163
M.L.....	6 14 20	13 28 41							
M.S.....	43 13 56	41 18 59	20 5 25	31 3 34	13 2 15	8 3 11	5 1 6	22 0 22	17 6 23
Grad. in Arch....		2 0 2	3 0 3	1 0 1	0 0 1	0 0 0	0 0 0	0 0 0	0 0 0
Grad. in Pub. H....		0 0 0	4 1 5	0 0 0	1 0 1	0 1 1	0 0 0	0 0 0	0 0 0
Grad. in Educ....					1 0 1	0 0 1	0 0 1	0 0 0	0 0 0
E.E.....					1 0 1	0 0 0	0 0 0	0 0 0	0 0 0
Met. E.....						1 0 1	0 0 0	0 0 0	0 0 0
Min. E.....						1 0 1	0 0 0	1 0 1	0 0 0
No. of higher degrees.....	80 46 126	98 75 173	114 58 172	126 68 194	127 81 208	68 62 130	66 77 143	120 75 195	146 102 248
A.B.....	23 24 47	11 24 35	201 310 511	257 331 588	226 357 583	151 453 604	251 422 673	369 509 878	440 647 1087
B.L.....	54 122 176	111 171 282							
(Nat. Sci....	80 65 145	56 64 120	5 11 16						
Commerce	32 0 32	27 0 27	37 3 40	39 1 40	46 2 48	13 2 15	23 7 30	37 14 51	66 22 88
Agricult're	45 3 48	67 4 71	74 5 79	78 2 80	102 0 102	40 3 43	43 3 46	74 6 80	106 5 111
Mechanics	30 0 30	47 0 47	41 0 41	38 0 38	39 0 39	12 0 12	15 0 15	42 0 42	44 1 45
B.S. Mining.....	25 0 25	25 0 25	15 0 15	13 0 13	14 0 14	5 0 5	8 0 8	15 0 15	15 0 15
Civil Eng..	31 0 31	30 0 30	33 0 33	32 0 32	38 0 38	14 0 14	5 0 5	17 0 17	18 0 18
Chemistry	11 0 11	7 0 7	13 1 14	4 1 5	13 0 13	10 0 10	8 1 9	6 1 7	13 0 13
Nursing....								0 5 5	0 3 3
No. of bach- elor's degrees	331 214 545	381 263 644	419 330 749	461 335 796	478 359 837	245 458 703	353 433 786	560 535 1095	702 678 1380
LL.B.....	22 0 22	30 0 30	18 0 18	8 0 8	16 0 16	6 0 6	11 1 12	12 1 13	5 1 6
*M.D.....	11 1 12	11 3 14	12 1 13	25 4 29	22 4 26		17 4 21	15 6 21	30 0 30
D.D.S.....	20 0 20	23 0 23	19 0 19	29 0 29	38 1 39	32 0 32	60 3 63	15 0 15	34 4 38
†Ph.G.....	28 2 30	41 2 43	36 1 37	27 2 29	31 1 32	22 3 25	23 0 23	30 9 39	39 5 44
Pharm.B.....	0 0 0	1 0 1	1 0 1	2 0 2	0 0 0	0 0 0	3 0 3	0 0 0	1 1 1
Ph.C.....					2 0 2	3 1 4	1 0 1	1 1 2	2 1 3
No. profession- al degrees....	81 3 84	106 5 111	86 2 88	91 6 97	109 6 115	63 4 67	115 8 123	73 17 90	110 12 122

*M.D. not conferred, Commencement, 1918, on account of the transition from the four-year to the five-year curriculum.

†Ph.G. discontinued and replaced by Ph.C. between 1905 and 1911 inclusive. Beginning 1915, Ph.C. was given for completion of four-year course.

‡Figures for 1921, as for the other years represented in this table, include degrees conferred in December.

TABLE 9.—Number of accredited schools each year since 1891.

	1891-92	1892-93	1893-94	1894-95	1895-96	1896-97	1897-98	1898-99	1899-1900	1900-01
Number public high schools accredited.....	24	30	39	43	52	61	66	76	87	93
Number private secondary schools accredited.....	7	10	9	14	15	15	16	15	23	23
Total number schools accredited.....	31	40	48	57	67	76	82	91	110	116
Number public high schools accredited.....	93	100	104	99	106	114	122	140	147	155
Number private secondary schools accredited.....	22	18	20	21	23	23	25	30	31	31
Total number schools accredited.....	115	118	124	120	129	137	147	170	178	186
Number public high schools accredited.....	172	181	192	189	191	248	256	259	270	271
Number private secondary schools accredited.....	31	32	34	36	36	53	60	58	62	62
Total number schools accredited.....	203	213	226	225	227	301	316	317	332	333

NOTE.—Schools authorized to recommend though not regularly accredited: 1909-10, 34; 1910-11, 26; 1911-12, 35; 1912-13, 40; 1913-14, 45; 1914-15, 53; 1915-16, 49.

The summary for 1920-21 includes 81 public and 27 private schools in Division B of the accredited list; the continued accrediting of schools in Division B is rendered uncertain by undeveloped organization, inadequate resources, or other causes.

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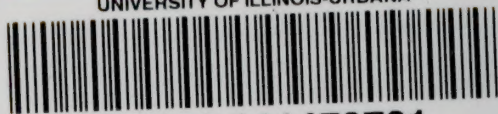
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